



Prep Standard - Chemical Standard Summary

Order ID : P1747

Test : SVOC-TCL BNA -20

Prepbatch ID : PB159586,

Sequence ID/Qc Batch ID: BG031424,

Standard ID :

EP2416,EP2439,EP2458,SP6396,SP6397,SP6405,SP6406,SP6419,SP6420,SP6421,SP6422,SP6423,SP6424,SP6425,
SP6426,SP6427,SP6439,

Chemical ID :

E3551,E3657,E3673,E3674,E3678,E3699,E3706,E3707,M5673,S10101,S10243,S10396,S10591,S10798,S10966,S109
67,S10968,S10969,S10970,S10971,S10988,S10989,S10990,S10991,S10992,S10993,S10994,S10995,S11014,S11089,
S11094,S11100,S11136,S11137,S11142,S11144,S11292,S11293,S11294,S11295,S11296,S11297,S11298,S11299,S1141
1,S11523,S11556,S11584,S11585,S11587,S11588,S11589,S11590,S11596,S11597,S11751,S11752,S11753,S11754,S11
755,S11881,S11883,S11884,S11885,S11886,S11887,S11888,S11889,S12013,S12016 10ul/1000ul
sample,S9923,W2606,

CHEMTECH

284, Sheffield Street, Mountainside NJ 07092 (908) 789 - 8900

Extractions STANDARD PREPARATION LOG

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|----------------|------------------------|------------------|------------------------|--------------------|----------------|------------------|--------------------------------|
| 314 | 1.1 H2SO4 SOLN | EP2416 | 11/29/2023 | 05/29/2024 | Rajesh Parikh | None | None | RUPESHKUMAR SHAH 11/29/2023 |

FROM 1000.00000ml of M5673 + 1000.00000ml of W2606 = Final Quantity: 2000.000 ml

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|----------------------------|------------------------|------------------|------------------------|--------------------|-------------------------------|------------------|--------------------------------|
| 1874 | 10 N SODIUM HYDROXIDE SOLN | EP2439 | 01/19/2024 | 06/03/2024 | Rajesh Parikh | Extraction_SC ALE_2 (EX-SC-2) | None | RUPESHKUMAR SHAH 01/19/2024 |

FROM 1000.00000ml of W2606 + 400.00000gram of E3657 = Final Quantity: 1000.000 ml

284, Sheffield Street, Mountainside NJ 07092 (908) 789 - 8900

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|---|------------------------|------------------|------------------------|--------------------|-------------------------------------|------------------|-----------------------------------|
| 3923 | Baked Sodium Sulfate | EP2458 | 03/08/2024 | 07/03/2024 | Rajesh Parikh | Extraction_SC ALE_2 (EX-SC-2) | None | RUPESHKUMAR SHAH 03/08/2024 |
| <u>FROM</u> | 4000.00000gram of E3551 = Final Quantity: 4000.000 gram | | | | | | | |

[illegible]

284, Sheffield Street, Mountainside NJ 07092 (908) 789 - 8900

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|--------------------|---|------------------------|------------------|------------------------|--------------------|----------------|------------------|------------------------------|
| 3895 | 50 ug/ml DFTPP 8270E | SP6397 | 01/15/2024 | 06/29/2024 | Jagrut Upadhyay | None | None | mohammad ahmed 01/15/2024 |
| <u>FROM</u> | 1.00000ml of S10243 + 19.00000ml of E3673 = Final Quantity: 20.000 ml | | | | | | | |

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|--|--|------------------------|------------------|------------------------|--------------------|----------------|------------------|------------------------------|
| 18 | Second Source Calibration Stock Standard, 100 PPM, (6270/625/CLP) | SP6405 | 01/19/2024 | 05/15/2024 | Jagrut Upadhyay | None | None | mohammad ahmed 01/22/2024 |
| <u>FROM</u> 0.04000ml of S10971 + 0.08000ml of S10995 + 0.10000ml of S11751 + 0.20000ml of S11556 + 0.20000ml of S11584 + 0.20000ml of S11881 + 1.18000ml of E3678 = Final Quantity: 2.000 ml | | | | | | | | |

284, Sheffield Street, Mountainside NJ 07092 (908) 789 - 8900

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|---|------------------------|------------------|------------------------|--------------------|----------------|------------------|------------------------------|
| 416 | 40 ng BNA ICV, 40 PPM | SP6406 | 01/19/2024 | 05/15/2024 | Jagrut Upadhyay | None | None | mohammad ahmed 01/22/2024 |
| <u>FROM</u> | 0.01000ml of S11523 + 0.60000ml of E3678 + 0.40000ml of SP6405 = Final Quantity: 1.010 ml | | | | | | | |

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|--------------------|---|------------------------|------------------|------------------------|--------------------|----------------|------------------|------------------------------|
| 3764 | 8270/625 Stock solution 100 ng | SP6419 | 02/22/2024 | 05/02/2024 | Jagrut Upadhyay | None | None | mohammad ahmed 02/23/2024 |
| <u>FROM</u> | 0.26700ml of S10101 + 0.40000ml of S11411 + 0.50000ml of S9923 + 1.00000ml of S10798 + 1.00000ml of S11089 + 1.00000ml of S11094 + 1.00000ml of S11100 + 1.00000ml of S11144 + 3.83300ml of E3706 = Final Quantity: 10.000 ml | | | | | | | |

284, Sheffield Street, Mountainside NJ 07092 (908) 789 - 8900

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|--------------------|---|------------------------|------------------|------------------------|--------------------|----------------|------------------|------------------------------|
| 413 | 80 ng BNA ICC, 80 PPM | SP6420 | 02/22/2024 | 05/02/2024 | Jagrut Upadhyay | None | None | mohammad ahmed 02/23/2024 |
| <u>FROM</u> | 0.01000ml of S12013 + 0.20000ml of E3706 + 0.80000ml of SP6419 = Final Quantity: 1.010 ml | | | | | | | |

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|---|------------------------|------------------|------------------------|--------------------|----------------|------------------|------------------------------|
| 412 | 60 ng BNA ICC, 60 PPM | SP6421 | 02/22/2024 | 05/02/2024 | Jagrut Upadhyay | None | None | mohammad ahmed 02/23/2024 |
| <u>FROM</u> | 0.01000ml of S12013 + 0.40000ml of E3706 + 0.60000ml of SP6419 = Final Quantity: 1.010 ml | | | | | | | |

284, Sheffield Street, Mountainside NJ 07092 (908) 789 - 8900

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|--------------------|---|------------------------|------------------|------------------------|--------------------|----------------|------------------|------------------------------|
| 411 | 50 ng BNA ICC, 50 PPM | SP6422 | 02/22/2024 | 05/02/2024 | Jagrut Upadhyay | None | None | mohammad ahmed 02/23/2024 |
| <u>FROM</u> | 0.01000ml of S12013 + 0.50000ml of E3706 + 0.50000ml of SP6419 = Final Quantity: 1.010 ml | | | | | | | |

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|---|------------------------|------------------|------------------------|--------------------|----------------|------------------|------------------------------|
| 410 | 40 ng BNA ICC, 40 PPM | SP6423 | 02/22/2024 | 05/02/2024 | Jagrut Upadhyay | None | None | mohammad ahmed 02/23/2024 |
| <u>FROM</u> | 0.01000ml of S12013 + 0.60000ml of E3706 + 0.40000ml of SP6419 = Final Quantity: 1.010 ml | | | | | | | |

284, Sheffield Street, Mountainside NJ 07092 (908) 789 - 8900

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|--------------------|---|------------------------|------------------|------------------------|--------------------|----------------|------------------|------------------------------|
| 3678 | 20 ng BNA ICC, 20 PPM | SP6424 | 02/22/2024 | 05/02/2024 | Jagrut Upadhyay | None | None | mohammad ahmed 02/23/2024 |
| <u>FROM</u> | 0.01000ml of S12013 + 0.80000ml of E3706 + 0.20000ml of SP6419 = Final Quantity: 1.010 ml | | | | | | | |

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|---|------------------------|------------------|------------------------|--------------------|----------------|------------------|---------------------------------|
| 408 | 10 ng BNA ICC, 10 PPM | SP6425 | 02/22/2024 | 05/02/2024 | Jagrut Upadhyay | None | None | mohammad ahmed 02/23/2024 |
| <u>FROM</u> | 0.01000ml of S12013 + 0.90000ml of E3706 + 0.10000ml of SP6419 = Final Quantity: 1.010 ml | | | | | | | |

284, Sheffield Street, Mountainside NJ 07092 (908) 789 - 8900

SVOC STANDARD PREPARATION LOG

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|---------------------|------------------------|------------------|------------------------|--------------------|----------------|------------------|---------------------------------|
| 407 | 5 ng BNA ICC, 5 PPM | SP6426 | 02/22/2024 | 05/02/2024 | Jagrut Upadhyay | None | None | mohammad ahmed 02/23/2024 |

FROM 0.01000ml of S12013 + 0.95000ml of E3706 + 0.05000ml of SP6419 = Final Quantity: 1.010 ml

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|------------------|-------------------------|------------------------|------------------|------------------------|--------------------|----------------|------------------|------------------------------|
| 175 | 2.5 ng BNA ICC, 2.5 PPM | SP6427 | 02/22/2024 | 05/02/2024 | Jagrut Upadhyay | None | None | mohammad ahmed 02/23/2024 |

FROM 0.01000ml of S12013 + 0.50000ml of E3706 + 0.50000ml of SP6426 = Final Quantity: 1.010 ml

284, Sheffield Street, Mountainside NJ 07092 (908) 789 - 8900

| <u>Recipe ID</u> | <u>NAME</u> | <u>NO.</u> | <u>Prep Date</u> | <u>Expiration Date</u> | <u>Prepared By</u> | <u>ScaleID</u> | <u>PipetteID</u> | <u>Supervised By</u> |
|--|-------------------------------------|------------------------|------------------|------------------------|--------------------|----------------|------------------|----------------------------|
| 171 | 8270/625 Spike Solution, 50/100 PPM | SP6439 | 02/29/2024 | 05/14/2024 | Jagrut Upadhyay | None | None | Yogesh Patel 03/12/2024 |
| <u>FROM</u> 0.10000ml of S11137 + 0.30000ml of S11136 + 0.40000ml of S10396 + 0.40000ml of S10591 + 0.40000ml of S11014 + 0.40000ml of S11142 + 0.90000ml of S11299 + 0.90000ml of S11597 + 0.90000ml of S11881 + 1.10000ml of S11754 + 1.30000ml of S11292 + 1.30000ml of S11293 + 1.30000ml of S11294 + 1.30000ml of S11295 + 1.30000ml of S11296 + 1.30000ml of S11297 + 1.30000ml of S11298 + 1.30000ml of S11584 + 1.30000ml of S11585 + 1.30000ml of S11587 + 1.30000ml of S11588 + 1.30000ml of S11589 + 1.30000ml of S11590 + 1.30000ml of S11596 + 1.30000ml of S11752 + 1.30000ml of S11753 + 1.30000ml of S11755 + 1.30000ml of S11883 + 1.30000ml of S11884 + 1.30000ml of S11885 + 1.30000ml of S11886 + 1.30000ml of S11887 + 1.30000ml of S11888 + 1.30000ml of S11889 + 163.00000ml of E3699 = Final Quantity: 200.000 ml | | | | | | | | |

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|-----------------------------|--|--------|-----------------|-------------------------|-----------------------------|----------------|
| PCI Scientific Supply, Inc. | PC19631-100 / SODIUM SULFATE, ANHYDROUS, PEST GRADE, 1 | 313201 | 07/03/2024 | 01/03/2024 / Rajesh | 07/20/2023 / Rajesh | E3551 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|-----------------------------|--|------------|-----------------|-------------------------|-----------------------------|----------------|
| PCI Scientific Supply, Inc. | PC19510-5 / Sodium Hydroxide Pellets 2.5 Kg, Pk of 4 | 23B1556310 | 06/03/2024 | 12/04/2023 / Rajesh | 12/01/2023 / Rajesh | E3657 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|------------------|---|------------|-----------------|-------------------------|-----------------------------|----------------|
| Seidler Chemical | BA-9644-A4 / Methylene Chloride,U-Resi, Cycle-Tainer (215L) | 23K0962009 | 06/29/2024 | 12/29/2023 / Rajesh | 12/15/2023 / Rajesh | E3673 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|------------------|--|------------|-----------------|-------------------------|-----------------------------|----------------|
| Seidler Chemical | BA-9254-03 / Acetone, Ultra Resi (cs/4x4L) | 23H1462005 | 07/03/2024 | 01/03/2024 / Rajesh | 01/03/2024 / Rajesh | E3674 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|------------------|---|------------|-----------------|-------------------------|-----------------------------|----------------|
| Seidler Chemical | BA-9644-A4 / Methylene Chloride,U-Resi, Cycle-Tainer (215L) | 23K0962009 | 07/16/2024 | 01/16/2024 / Rajesh | 01/11/2024 / Rajesh | E3678 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|------------------|--|-------------|-----------------|-------------------------|-----------------------------|----------------|
| Seidler Chemical | BA-9254-03 / Acetone, Ultra Resi (cs/4x4L) | 23H14626005 | 08/21/2024 | 02/21/2024 / RUPESH | 02/14/2024 / RUPESH | E3699 |

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|------------------|---|------------|-----------------|-------------------------|-----------------------------|----------------|
| Seidler Chemical | BA-9644-A4 / Methylene Chloride,U-Resi, Cycle-Tainer (215L) | 24A1562007 | 08/19/2024 | 02/19/2024 / RUPESH | 01/31/2024 / RUPESH | E3706 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|------------------|---|------------|-----------------|-------------------------|-----------------------------|----------------|
| Seidler Chemical | BA-9644-A4 / Methylene Chloride,U-Resi, Cycle-Tainer (215L) | 24A1562007 | 08/28/2024 | 02/28/2024 / Rajesh | 02/19/2024 / Rajesh | E3707 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|------------------|---|------------|-----------------|-------------------------|-----------------------------|----------------|
| Seidler Chemical | BA-9673-33 / Sulfuric Acid, Instra-Analyzed (cs/6c2.5L) | 23D2462010 | 03/20/2028 | 09/21/2023 / mohan | 09/05/2023 / mohan | M5673 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|-------------------|---|--------|-----------------|-------------------------|-----------------------------|----------------|
| CPI International | Z-112090-04 / CLP Acid Surrogate Solution, 7500 mg/L, 1ml | 440246 | 05/02/2024 | 11/02/2023 / Jagrut | 12/09/2021 / Christian | S10101 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31615 / SV Mixture, GC/MS Tuning Mixture, CH2Cl2, 1mL, | A0182667 | 07/15/2024 | 01/15/2024 / Jagrut | 03/18/2022 / Christian | S10243 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555871 / Custom Standard, 4-nitrophenol Std [CS 5238-4] | A0185300 | 05/15/2024 | 11/15/2023 / yogesh | 05/18/2022 / Christian | S10396 |

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555868 / Custom Standard, Benzidine Std [CS 5328-1] | A0186373 | 08/29/2024 | 02/29/2024 / Jagrut | 07/05/2022 / Christian | S10591 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|-------------------|--|--------|-----------------|-------------------------|-----------------------------|----------------|
| CPI International | Z-110816-01 / Custom 8270 Mix, 4-79, 1000 mg/L, 1 mL, (Maximum Expiration: 180 Days) | 414127 | 08/22/2024 | 02/22/2024 / Jagrut | 09/20/2022 / Christian | S10798 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31087 / Acid Surrogate 10,000ug/ml,methanol,5ml/a mpul | A0188108 | 07/11/2024 | 01/11/2024 / Jagrut | 12/28/2022 / Christian | S10966 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31087 / Acid Surrogate 10,000ug/ml,methanol,5ml/a mpul | A0188108 | 07/11/2024 | 01/11/2024 / Jagrut | 12/28/2022 / Christian | S10967 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31087 / Acid Surrogate 10,000ug/ml,methanol,5ml/a mpul | A0188108 | 07/11/2024 | 01/11/2024 / Jagrut | 12/28/2022 / Christian | S10968 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31087 / Acid Surrogate 10,000ug/ml,methanol,5ml/a mpul | A0188108 | 07/11/2024 | 01/11/2024 / Jagrut | 12/28/2022 / Christian | S10969 |

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31087 / Acid Surrogate 10,000ug/ml,methanol,5ml/a mpul | A0188108 | 07/11/2024 | 01/11/2024 / Jagrut | 12/28/2022 / Christian | S10970 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31087 / Acid Surrogate 10,000ug/ml,methanol,5ml/a mpul | A0188108 | 07/11/2024 | 01/11/2024 / Jagrut | 12/28/2022 / Christian | S10971 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31086 / Base Neutral Surrogate 5000ug/ml,CH ₂ Cl ₂ ,5ml | A0189418 | 07/11/2024 | 01/11/2024 / Jagrut | 12/28/2022 / Christian | S10988 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31086 / Base Neutral Surrogate 5000ug/ml,CH ₂ Cl ₂ ,5ml | A0189418 | 07/11/2024 | 01/11/2024 / Jagrut | 12/28/2022 / Christian | S10989 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31086 / Base Neutral Surrogate 5000ug/ml,CH ₂ Cl ₂ ,5ml | A0189418 | 07/11/2024 | 01/11/2024 / Jagrut | 12/28/2022 / Christian | S10990 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31086 / Base Neutral Surrogate 5000ug/ml,CH ₂ Cl ₂ ,5ml | A0189418 | 07/11/2024 | 01/11/2024 / Jagrut | 12/28/2022 / Christian | S10991 |

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31086 / Base Neutral Surrogate 5000ug/ml,CH ₂ Cl ₂ ,5ml | A0189418 | 07/11/2024 | 01/11/2024 / Jagrut | 12/28/2022 / Christian | S10992 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31086 / Base Neutral Surrogate 5000ug/ml,CH ₂ Cl ₂ ,5ml | A0189418 | 07/11/2024 | 01/11/2024 / Jagrut | 12/28/2022 / Christian | S10993 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31086 / Base Neutral Surrogate 5000ug/ml,CH ₂ Cl ₂ ,5ml | A0189418 | 07/11/2024 | 01/11/2024 / Jagrut | 12/28/2022 / Christian | S10994 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31086 / Base Neutral Surrogate 5000ug/ml,CH ₂ Cl ₂ ,5ml | A0189418 | 07/11/2024 | 01/11/2024 / Jagrut | 12/28/2022 / Christian | S10995 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555872 / Custom Standard, pentachlorophenol Std [CS 5328-5] | A0193449 | 05/14/2024 | 11/14/2023 / yogesh | 01/13/2023 / Christian | S11014 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|-------------------|--|--------|-----------------|-------------------------|-----------------------------|----------------|
| CPI International | Z-110817-01 / Custom 8270 Mix, 4-55, 1000 mg/L, 1 ml, (Maximum Expiration: 90 Days) | 414125 | 08/22/2024 | 02/22/2024 / Jagrut | 02/07/2023 / Christian | S11089 |

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|-------------------|---|--------|-----------------|-------------------------|-----------------------------|----------------|
| CPI International | Z-010442-07 / Benzaldehyde Solution, 1000 mg/L, 1.3 ml, (Maximum Expiration: 90 Days) | 441819 | 06/01/2024 | 02/22/2024 / Jagrut | 02/07/2023 / Christian | S11094 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|-------------------|--|--------|-----------------|-------------------------|-----------------------------|----------------|
| CPI International | z-110381-01 / 8270 Calibration Solution, 76-1, 500 & 1,000 mg/L, 1ml | 478725 | 08/22/2024 | 02/22/2024 / Jagrut | 02/07/2023 / Christian | S11100 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555870 / Custom Standard, 2,4-dinitrophenol Std [CS 5328-3] | A0194698 | 08/29/2024 | 02/29/2024 / Jagrut | 02/20/2023 / Christian | S11136 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555870 / Custom Standard, 2,4-dinitrophenol Std [CS 5328-3] | A0194698 | 05/15/2024 | 11/15/2023 / yogesh | 02/20/2023 / Christian | S11137 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555869 / Custom Standard, hexachlorocyclopentadiene Std [CS 5328-2] | A0194702 | 07/18/2024 | 01/18/2024 / Rahul | 02/20/2023 / Christian | S11142 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|-------------------|---|--------|-----------------|-------------------------|-----------------------------|----------------|
| CPI International | Z-010074-07 / 3,3'-Dichlorobenzidine Solution, 1,000 mg/L, 1 ml, (Maximum Expiration: 180 days) | 406703 | 08/22/2024 | 02/22/2024 / Jagrut | 03/06/2023 / Christian | S11144 |



284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555223 / Custom 8270 Plus Std #1 [2nd lot at \$100 per ampul if requested - contact ARM with Request] | A0197354 | 08/29/2024 | 02/29/2024 / Jagrut | 04/24/2023 / Christian | S11292 |

[CS 4978-1]

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555223 / Custom 8270 Plus Std #1 [2nd lot at \$100 per ampul if requested - contact ARM with Request] | A0197354 | 08/29/2024 | 02/29/2024 / Jagrut | 04/24/2023 / Christian | S11293 |

[CS 4978-1]

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555223 / Custom 8270 Plus Std #1 [2nd lot at \$100 per ampul if requested - contact ARM with Request] | A0197354 | 08/29/2024 | 02/29/2024 / Jagrut | 04/24/2023 / Christian | S11294 |

[CS 4978-1]

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555223 / Custom 8270 Plus Std #1 [2nd lot at \$100 per ampul if requested - contact ARM with Request] | A0197354 | 08/29/2024 | 02/29/2024 / Jagrut | 04/24/2023 / Christian | S11295 |

[CS 4978-1]

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555223 / Custom 8270 Plus Std #1 [2nd lot at \$100 per ampul if requested - contact ARM with Request] | A0197354 | 08/29/2024 | 02/29/2024 / Jagrut | 04/24/2023 / Christian | S11296 |

[CS 4978-1]

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555223 / Custom 8270 Plus Std #1 [2nd lot at \$100 per ampul if requested - contact ARM with Request] | A0197354 | 08/29/2024 | 02/29/2024 / Jagrut | 04/24/2023 / Christian | S11297 |

[CS 4978-1]

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555223 / Custom 8270 Plus Std #1 [2nd lot at \$100 per ampul if requested - contact ARM with Request] | A0197354 | 08/29/2024 | 02/29/2024 / Jagrut | 04/24/2023 / Christian | S11298 |

[CS 4978-1]

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555223 / Custom 8270 Plus Std #1 [2nd lot at \$100 per ampul if requested - contact ARM with Request] | A0197354 | 08/29/2024 | 02/29/2024 / Jagrut | 04/24/2023 / Christian | S11299 |

[CS 4978-1]

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|-------------------|---|--------|-----------------|-------------------------|-----------------------------|----------------|
| CPI International | Z-110094-02 / CLP Base/Neutral Surrogate Solution, 5000 mg/L, 1ml | 503442 | 06/27/2024 | 12/27/2023 / Rahul | 07/17/2023 / yogesh | S11411 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31206 / SV Mix, CLP method, Internal Std, 2000ug/mL, CH2Cl2, 1mL | A0196843 | 07/17/2024 | 01/17/2024 / Rahul | 08/28/2023 / Yogesh | S11523 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555223 / Custom 8270 Plus Std #1 [2nd lot at \$100 per ampul if requested - contact ARM with Request] | A0201940 | 05/15/2024 | 11/15/2023 / yogesh | 09/18/2023 / Kiran | S11556 |

[CS 4978-1]

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555224 / Custom 8270 Plus Std #2 [2nd lot at \$85 per ampul if requested - contact ARM with Request] | A0201998 | 07/18/2024 | 01/18/2024 / Rahul | 09/18/2023 / Kiran | S11584 |

[CS 4978-2]

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555224 / Custom 8270 Plus Std #2 [2nd lot at \$85 per ampul if requested - contact ARM with Request] | A0201998 | 07/23/2024 | 01/23/2024 / Rahul | 09/18/2023 / Kiran | S11585 |

[CS 4978-2]

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555224 / Custom 8270 Plus Std #2 [2nd lot at \$85 per ampul if requested - contact ARM with Request] | A0201998 | 08/29/2024 | 02/29/2024 / Jagrut | 09/18/2023 / Kiran | S11587 |

[CS 4978-2]

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555224 / Custom 8270 Plus Std #2 [2nd lot at \$85 per ampul if requested - contact ARM with Request] | A0201998 | 08/29/2024 | 02/29/2024 / Jagrut | 09/18/2023 / Kiran | S11588 |

[CS 4978-2]

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555224 / Custom 8270 Plus Std #2 [2nd lot at \$85 per ampul if requested - contact ARM with Request] | A0201998 | 08/29/2024 | 02/29/2024 / Jagrut | 09/18/2023 / Kiran | S11589 |

[CS 4978-2]

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555224 / Custom 8270 Plus Std #2 [2nd lot at \$85 per ampul if requested - contact ARM with Request] | A0201998 | 08/29/2024 | 02/29/2024 / Jagrut | 09/18/2023 / Kiran | S11590 |

[CS 4978-2]

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555224 / Custom 8270 Plus Std #2 [2nd lot at \$85 per ampul if requested - contact ARM with Request] | A0201998 | 05/15/2024 | 11/15/2023 / yogesh | 09/18/2023 / Kiran | S11596 |

[CS 4978-2]

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 555224 / Custom 8270 Plus Std #2 [2nd lot at \$85 per ampul if requested - contact ARM with Request] | A0201998 | 08/29/2024 | 02/29/2024 / Jagrut | 09/18/2023 / Kiran | S11597 |

[CS 4978-2]

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31853 / 1,4-Dioxane, 2000 ug/ml , Solvent: Methylene Chloride | A0196453 | 07/18/2024 | 01/18/2024 / Rahul | 11/21/2023 / Rahul | S11751 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31853 / 1,4-Dioxane, 2000 ug/ml , Solvent: Methylene Chloride | A0196453 | 08/29/2024 | 02/29/2024 / Jagrut | 11/21/2023 / Rahul | S11752 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31853 / 1,4-Dioxane, 2000 ug/ml , Solvent: Methylene Chloride | A0196453 | 08/29/2024 | 02/29/2024 / Jagrut | 11/21/2023 / Rahul | S11753 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31853 / 1,4-Dioxane, 2000 ug/ml , Solvent: Methylene Chloride | A0196453 | 07/23/2024 | 01/23/2024 / Rahul | 11/21/2023 / Rahul | S11754 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|---|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31853 / 1,4-Dioxane, 2000 ug/ml , Solvent: Methylene Chloride | A0196453 | 08/29/2024 | 02/29/2024 / Jagrut | 11/21/2023 / Rahul | S11755 |

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31850 / 8270 SV Mix, 8270 Mega Mix 1mL, 1000ug/mL, CH ₂ Cl ₂ [New Solvent 100% CH ₂ Cl ₂] | A0197982 | 07/19/2024 | 01/19/2024 / Jagrut | 11/21/2023 / rahul | S11881 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31850 / 8270 SV Mix, 8270 Mega Mix 1mL, 1000ug/mL, CH ₂ Cl ₂ [New Solvent 100% CH ₂ Cl ₂] | A0197982 | 08/29/2024 | 02/29/2024 / Jagrut | 11/21/2023 / rahul | S11883 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31850 / 8270 SV Mix, 8270 Mega Mix 1mL, 1000ug/mL, CH ₂ Cl ₂ [New Solvent 100% CH ₂ Cl ₂] | A0197982 | 08/29/2024 | 02/29/2024 / Jagrut | 11/21/2023 / rahul | S11884 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31850 / 8270 SV Mix, 8270 Mega Mix 1mL, 1000ug/mL, CH ₂ Cl ₂ [New Solvent 100% CH ₂ Cl ₂] | A0197982 | 08/29/2024 | 02/29/2024 / Jagrut | 11/21/2023 / rahul | S11885 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31850 / 8270 SV Mix, 8270 Mega Mix 1mL, 1000ug/mL, CH ₂ Cl ₂ [New Solvent 100% CH ₂ Cl ₂] | A0197982 | 08/29/2024 | 02/29/2024 / Jagrut | 11/21/2023 / rahul | S11886 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31850 / 8270 SV Mix, 8270 Mega Mix 1mL, 1000ug/mL, CH ₂ Cl ₂ [New Solvent 100% CH ₂ Cl ₂] | A0197982 | 08/29/2024 | 02/29/2024 / Jagrut | 11/21/2023 / rahul | S11887 |

CHEMICAL RECEIPT LOG BOOK

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31850 / 8270 SV Mix, 8270 Mega Mix 1mL, 1000ug/mL, CH ₂ Cl ₂ [New Solvent 100% CH ₂ Cl ₂] | A0197982 | 08/29/2024 | 02/29/2024 / Jagrut | 11/21/2023 / rahul | S11888 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31850 / 8270 SV Mix, 8270 Mega Mix 1mL, 1000ug/mL, CH ₂ Cl ₂ [New Solvent 100% CH ₂ Cl ₂] | A0197982 | 08/29/2024 | 02/29/2024 / Jagrut | 11/21/2023 / rahul | S11889 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|----------|--|----------|-----------------|-------------------------|-----------------------------|----------------|
| Restek | 31206 / SV Mix, CLP method, Internal Std, 2000ug/mL, CH ₂ Cl ₂ , 1mL | A0201320 | 08/20/2024 | 02/20/2024 / Rahul | 12/21/2023 / Rahul | S12013 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|-------------------|--|--------|-----------------|-------------------------|-----------------------------|----------------|
| CPI International | z-010223-01 / 1,4-Dioxane Solution, 2,000mg/L, 1ml | 459696 | 06/27/2024 | 12/27/2023 / Rahul | 09/03/2021 / Christian | S9923 |

| Supplier | ItemCode / ItemName | Lot # | Expiration Date | Date Opened / Opened By | Received Date / Received By | Chemtech Lot # |
|------------------|---------------------|---------------------|-----------------|-------------------------|-----------------------------|----------------|
| Seidler Chemical | DIW / DI Water | Daily Lab-Certified | 10/24/2024 | 10/24/2019 / apatel | 10/24/2019 / apatel | W2606 |



5580 Skylane Blvd
Santa Rosa, CA 95403

(707)525-5788
(800)878-7654 Toll Free
(707)545-7901 Fax

Manufacturer's Quality System
Audited & Registered
by TUV USA to ISO 9001:2015

Date Received: _____

Certificate of Analysis

Rev 0

Page 1 of 1

| | | | | | |
|--------------|----------|----------|--------------------|------------|---|
| Catalog No.: | Lot No.: | Storage: | Solvent: | Exp. Date: | Description: |
| Z-010074-07 | 406703 | ≤ -10 °C | Methylene Chloride | 3/30/2025 | 3,3'-Dichlorobenzidine Solution, 1,000 mg/L, 1 mL |

| Compound | CAS No. | Purity (%) | Compound Lot No. | Concentration, mg/L |
|------------------------|---------|------------|------------------|---------------------|
| 3,3'-dichlorobenzidine | 91-94-1 | 99.5 | 74.3.26P | 989 ± 7.53 |

Received on
02/07/23
by
CG
S11084
to
S11088

*Not a certified value

Certified By: _____

Jacob Mulloy
Chemist

All weights are traceable through N. I. S. T. Test No. 822/264157-00.
Concentration (correct for purity) and uncertainty (95% confidence) values
listed are determined gravimetrically.



5580 Skylane Blvd
Santa Rosa, CA 95403

(707)525-5788
(800)878-7654 Toll Free
(707)545-7901 Fax

Manufacturer's Quality System
Audited & Registered
by TUV USA to ISO 9001:2015

Date Received: _____

Certificate of Analysis

Rev 0

Page 1 of 1

| | | | | | |
|---------------------|-----------------|-----------------|--------------------|-------------------|--|
| Catalog No.: | Lot No.: | Storage: | Solvent: | Exp. Date: | Description: |
| Z-110817-01 | 414125 | ≤ -10 °C | Methylene Chloride | 6/21/2025 | Custom 8270 Mix, 4-55, 1000 mg/L, 1 mL |

| Compound | CAS No. | Purity (%) | Compound Lot No. | Concentration, mg/L |
|----------------------------|---------|------------|------------------|---------------------|
| acetophenone | 98-86-2 | 99.2 | 85.8.1P | 998 ± 11.5 |
| benzoic acid | 65-85-0 | 100 | 123.7.1P | 1010 ± 5.88 |
| biphenyl | 92-52-4 | 99.9 | 366.29.1P | 999 ± 5.82 |
| 1,2,4,5-tetrachlorobenzene | 95-94-3 | 99.7 | 53.7.2P | 993 ± 5.79 |

Received on
02/07/23
by
CG
S11089
to
S11093

*Not a certified value

Manufactured by o2si smart solutions, Accredited to ISO 9001:2008 by NSF and ISO/IEC 17025:2005 (Certification No. 3031.01) and ISO Guide 34:2009 (Certification No. 3031.02) by A2LA

Certified By: _____

Shane Overcash
Chemist

All weights are traceable through N. I. S. T. Test No. 822/264157-00.
Concentration (correct for purity) and uncertainty (95% confidence) values listed are determined gravimetrically.



5580 Skyline Blvd
Santa Rosa, CA 95403

(707)525-5788
(800)878-7654 Toll Free
(707)545-7901 Fax

Manufacturer's Quality System
Audited & Registered
by TUV USA to ISO 9001:2015

Date Received: _____

Certificate of Analysis

Rev 0

Page 1 of 1

| | | | | | |
|---------------------|-----------------|-----------------|--------------------|-------------------|---|
| Catalog No.: | Lot No.: | Storage: | Solvent: | Exp. Date: | Description: |
| Z-110816-01 | 414127 | ≤ -10 °C | Methylene Chloride | 6/21/2025 | Custom 8270 Mix, 4-79, 1000 mg/L, 1 mL |

| Compound | CAS No. | Purity (%) | Compound Lot No. | Concentration, mg/L |
|-------------|-----------|------------|------------------|---------------------|
| atrazine | 1912-24-9 | 99.5 | 337.7.3P | 997 ± 5.81 |
| benzidine | 92-87-5 | 99.9 | 124.18.6.2P | 991.8 ± 5.77 |
| caprolactam | 105-60-2 | 99.9 | 271.1.6P | 999 ± 5.82 |

Received on
09/20/22
by CG
S10795
to
S10799

*Not a certified value

Manufactured by o2si smart solutions, Accredited to ISO 9001:2008 by NSF and ISO/IEC 17025:2005 (Certification No. 3031.01) and ISO Guide 34:2009 (Certification No. 3031.02) by A2LA

Certified By: _____

Shane Overcash
Chemist

All weights are traceable through N. I. S. T. Test No. 822/264157-00.
Concentration (correct for purity) and uncertainty (95% confidence) values listed are determined gravimetrically.



5580 Skylane Blvd
Santa Rosa, CA 95403

(707)525-5788
(800)878-7654 Toll Free
(707)545-7901 Fax

Manufacturer's Quality System
Audited & Registered
by TUV USA to ISO 9001:2015

Date Received: _____

Certificate of Analysis

Rev 0

Page 1 of 1

Catalog No.: Lot No.: **Storage:** **Solvent:** **Exp. Date:** **Description:**
Z-112090 440246 $\leq -10^{\circ}\text{C}$ Methylene Chloride 2/16/2026 CLP Acid Surrogate Solution, 7,500 mg/L, 1 mL
-04

| Compound | CAS No. | Purity (%) | Compound Lot No. | Concentration, mg/L |
|-------------------------------|------------|------------|------------------|---------------------|
| 2-chlorophenol-d ₄ | 93951-73-6 | 99.3 | 248.12.7P | 7487 \pm 17.2 |
| 2-fluorophenol | 367-12-4 | 99.8 | 10.7.3.3P | 7513 \pm 17.26 |
| phenol-d ₆ | 13127-88-3 | 99.9 | 949.120.8P | 7481 \pm 17.19 |
| 2,4,6-tribromophenol | 118-79-6 | 99.8 | 12.1.6P | 7469 \pm 17.17 |

Received on

02/25/21

by
CG

S9236
to

S9240

*Not a certified value

Manufactured by o2si smart solutions, Accredited to ISO 9001:2008 by NSF and ISO/IEC 17025:2005 (Certification No. 3031.01) and ISO Guide 34:2009 (Certification No. 3031.02) by A2LA

Erica Castiglione

Certified By:

Erica Castiglione
Chemist

All weights are traceable through N. I. S. T. Test No. 822/264157-00.
Concentration (correct for purity) and uncertainty (95% confidence) values listed are determined gravimetrically.



5580 Skylane Blvd
Santa Rosa, CA 95403

(707)525-5788
(800)878-7654 Toll Free
(707)545-7901 Fax

Manufacturer's Quality System
Audited & Registered
by TUV USA to ISO 9001:2015

Date Received: _____

Certificate of Analysis

Rev 0

Page 1 of 1

| Catalog No.: | Lot No.: | Storage: | Solvent: | Exp. Date: | Description: | |
|--------------|----------|----------|--------------------|------------|--|---------------------|
| Z-010442-07 | 441819 | ≤ -10 °C | Methylene Chloride | 6/1/2024 | Benzaldehyde Solution, 1000 mg/L, 1.3 mL | |
| Compound | | | CAS No. | Purity (%) | Compound Lot No. | Concentration, mg/L |
| benzaldehyde | | | 100-52-7 | 99.5 | 442.3.2.1P | 1001 ± 12.89 |

Received on
02/07/23
by CG

S 11094
to
S 11095

*Not a certified value

Katherine Wood

Certified By: _____

Katherine Wood
Chemist

All weights are traceable through N. I. S. T. Test No. 822/264157-00.
Concentration (correct for purity) and uncertainty (95% confidence) values
listed are determined gravimetrically.



5580 Skylane Blvd
Santa Rosa, CA 95403

(707)525-5788
(800)878-7654 Toll Free
(707)545-7901 Fax

Manufacturer's Quality System
Audited & Registered
by TUV USA to ISO 9001:2015

Date Received: _____

Certificate of Analysis

Rev 0

Page 1 of 1

| Catalog No.: | Lot No.: | Storage: | Solvent: | Exp. Date: | Description: | |
|-----------------|----------|----------|--------------------|------------|---|---------------------|
| Z-010223 -01 | 459696 | ≤ -10 °C | Methylene Chloride | 7/13/2024 | 1,4-Dioxane Solution, 2,000 mg/L, 1 mL | |
| Compound | | | CAS No. | Purity (%) | Compound Lot No. | Concentration, mg/L |
| 1,4-dioxane | | | 123-91-1 | 100 | 223.1.3P | 1993 ± 21.11 |

Received
on
04/22/22
by
CG
S10318
to
S10322

*Not a certified value

Manufactured by o2si smart solutions, Accredited to ISO 9001:2008 by NSF and ISO/IEC 17025:2005 (Certification No. 3031.01) and ISO Guide 34:2009 (Certification No. 3031.02) by A2LA

Certified By: _____

Joanna Radu
Chemist

All weights are traceable through N. I. S. T. Test No. 822/264157-00.
Concentration (correct for purity) and uncertainty (95% confidence) values
listed are determined gravimetrically.



5580 Skylane Blvd
Santa Rosa, CA 95403

(707)525-5788
(800)878-7654 Toll Free
(707)545-7901 Fax

Received on
02/01/23 by CG S11100

Manufacturer's Quality System
Audited & Registered
by TUV USA to ISO 9001:2015

Date Received: _____

Certificate of Analysis

Rev 0

Page 1 of 4

Catalog No.: Lot No.: Storage: Solvent: Exp. Date: Description:
Z-110381-01 478725 $\leq -10^{\circ}\text{C}$ Methylene Chloride 3/29/2027 Method 8270 Calibration Solution, 76-1, 500 & 1,000 mg/L, 1 mL

| Compound | CAS No. | Purity (%) | Compound Lot No. | Concentration, mg/L |
|-----------------------------------|----------|------------|------------------|---------------------|
| acenaphthene | 83-32-9 | 99.9 | 13.1.5P | 997.8 \pm 9.78 |
| acenaphthylene | 208-96-8 | 97.6 | 14.290.1P | 1001 \pm 9.81 |
| aniline | 62-53-3 | 99.9 | 64.7.1P | 999.6 \pm 9.79 |
| anthracene | 120-12-7 | 99.5 | 15.7.1P | 999.4 \pm 9.8 |
| azobenzene | 103-33-3 | 98.1 | 252.7.2P | 1001 \pm 9.82 |
| benzo[a]anthracene | 56-55-3 | 98.7 | 16.7.2.5P | 1002 \pm 5.75 |
| benzo[b]fluoranthene | 205-99-2 | 98.7 | 17.1.16P | 1000 \pm 9.8 |
| benzo[k]fluoranthene | 207-08-9 | 98.9 | 18.421.4P | 1005 \pm 11.01 |
| benzo[ghi]perylene | 191-24-2 | 95 | 19.286.3.1P | 999.4 \pm 13.96 |
| benzo[a]pyrene | 50-32-8 | 98.3 | 20.286.1P | 999.9 \pm 5.74 |
| benzyl alcohol | 100-51-6 | 99.9 | 65.18.1P | 1002 \pm 9.83 |
| bis(2-chloroethoxy)methane | 111-91-1 | 98.5 | 31.3.11P | 1000 \pm 17.05 |
| bis(2-chloroethyl)ether | 111-44-4 | 99.8 | 32.7.1P | 1000 \pm 13.85 |
| bis(2-chloro-1-methylethyl) ether | 108-60-1 | 99.5 | 34.3.14P | 999.7 \pm 14.69 |
| bis(2-ethylhexyl)adipate | 103-23-1 | 99.5 | 874.7.1P | 1006 \pm 9.86 |
| bis(2-ethylhexyl)phthalate | 117-81-7 | 99.4 | 33.29.1P | 1004 \pm 17.12 |
| 4-bromophenyl phenyl ether | 101-55-3 | 99.4 | 35.7.1.1P | 1000 \pm 13.85 |
| butyl benzyl phthalate | 85-68-7 | 98 | 36.1.5P | 990.8 \pm 16.9 |
| carbazole | 86-74-8 | 99 | 239.7.1P | 996.9 \pm 9.81 |

*Not a certified value

Manufactured by o2si smart solutions, Accredited to ISO 9001:2008 by NSF and ISO/IEC 17025:2005 (Certification No. 3031.01) and ISO Guide 34:2009 (Certification No. 3031.02) by A2LA

Certified By: _____

Clint Tipton
Chemist

All weights are traceable through N. I. S. T. Test No. 822/264157-00.
Concentration (correct for purity) and uncertainty (95% confidence) values listed are determined gravimetrically.

Certificate of Analysis

Page 2 of 4

Catalog No.: Z-110381-01

Lot No.: 478725

Expiration Date: 3/29/2027

| Compound | CAS No. | Purity (%) | Compound Lot No. | Concentration, mg/L |
|----------------------------|-----------|------------|------------------|---------------------|
| 4-chloroaniline | 106-47-8 | 100 | 66.7.1P | 1004 ± 9.83 |
| 4-chlorophenylphenyl ether | 7005-72-3 | 98 | 37.158.2P | 1000 ± 17.05 |
| 4-chloro-3-methylphenol | 59-50-7 | 99.9 | 102.7.1.1P | 999.7 ± 5.74 |
| 2-chloronaphthalene | 91-58-7 | 99.8 | 42.7.5.2P | 1010 ± 9.89 |
| 2-chlorophenol | 95-57-8 | 99.9 | 103.1.3.1P | 999.7 ± 5.74 |
| chrysene | 218-01-9 | 96 | 21.286.2P | 1001 ± 13.98 |
| dibenz[a,h]anthracene | 53-70-3 | 99.44 | 22.286.3P | 1010 ± 9.85 |
| dibenzofuran | 132-64-9 | 100 | 67.7.2.1P | 1001 ± 9.76 |
| di-n-butyl phthalate | 84-74-2 | 99.8 | 40.9.2P | 999.8 ± 17.05 |
| 1,2-dichlorobenzene | 95-50-1 | 99.5 | 43.1.2P | 992.4 ± 9.72 |
| 1,3-dichlorobenzene | 541-73-1 | 99.8 | 44.1.2P | 993.8 ± 9.73 |
| 1,4-dichlorobenzene | 106-46-7 | 99.9 | 45.29.2P | 991.8 ± 9.71 |
| 2,4-dichlorophenol | 120-83-2 | 99.2 | 104.9.1.1P | 1011 ± 5.8 |
| diethyl phthalate | 84-66-2 | 99.8 | 38.7.1P | 999.1 ± 13.84 |
| 2,4-dimethylphenol | 105-67-9 | 99.6 | 105.7.1.1P | 999.3 ± 13.84 |
| dimethyl phthalate | 131-11-3 | 99.9 | 39.9.2P | 1001 ± 13.87 |
| 1,2-dinitrobenzene | 528-29-0 | 99.86 | 86.7.3.1P | 1001 ± 9.76 |
| 1,3-dinitrobenzene | 99-65-0 | 100 | 313.7.2P | 1002 ± 9.83 |
| 1,4-dinitrobenzene | 100-25-4 | 99.5 | 907.1.2P | 998.5 ± 13.95 |
| 2,4-dinitrophenol | 51-28-5 | 99.9 | 106.1.6DP | 1000 ± 13.85 |
| 2,4-dinitrotoluene | 121-14-2 | 100 | 87.7.3P | 1002 ± 13.88 |
| 2,6-dinitrotoluene | 606-20-2 | 99.4 | 88.7.2.1P | 1001 ± 13.87 |
| di-n-octyl phthalate | 117-84-0 | 99.1 | 41.7.5P | 989.4 ± 13.7 |
| diphenylamine | 122-39-4 | 99.9 | 78.29.1P | 999.8 ± 17.05 |
| 2,3,5,6-tetrachlorophenol | 935-95-5 | 99 | 1112.18.1P | 1012 ± 14.14 |
| fluoranthene | 206-44-0 | 98.6 | 23.7.3P | 1005 ± 5.77 |
| fluorene | 86-73-7 | 98.5 | 24.29.1P | 1002 ± 9.82 |

*Not a certified value

Manufactured by o2si smart solutions, Accredited to ISO 9001:2008 by NSF and ISO/IEC 17025:2005 (Certification No. 3031.01) and ISO Guide 34:2009 (Certification No. 3031.02) by A2LA

Certified By:



Clint Tipton
Chemist

All weights are traceable through N. I. S. T. Test No. 822/264157-00. Concentration (correct for purity) and uncertainty (95% confidence) values listed are determined gravimetrically.

Certificate of Analysis

Page 3 of 4

Catalog No.: Z-110381-01

Lot No.: 478725

Expiration Date: 3/29/2027

| Compound | CAS No. | Purity (%) | Compound Lot No. | Concentration, mg/L |
|----------------------------|----------|------------|------------------|---------------------|
| hexachlorobenzene | 118-74-1 | 99 | 46.158.4P | 994.2 ± 13.88 |
| hexachlorobutadiene | 87-68-3 | 98 | 47.158.3.1P | 988.2 ± 13.8 |
| hexachlorocyclopentadiene | 77-47-4 | 96.5 | 48.2.1P | 994.5 ± 13.88 |
| hexachloroethane | 67-72-1 | 99.9 | 49.1.4P | 993.4 ± 9.73 |
| indeno[1,2,3-cd]pyrene | 193-39-5 | 98 | 25.286.3P | 1002 ± 5.75 |
| isophorone | 78-59-1 | 98.8 | 90.1.2P | 999.9 ± 5.74 |
| 2-methyl-4,6-dinitrophenol | 534-52-1 | 100 | 107.1.4.3DP | 1003 ± 5.76 |
| 1-methylnaphthalene | 90-12-0 | 98.4 | 249.7.4P | 1001 ± 9.81 |
| 2-methylnaphthalene | 91-57-6 | 97.4 | 68.7.2P | 1008 ± 5.79 |
| 2-methylphenol | 95-48-7 | 99.6 | 114.7.3P | 1002 ± 13.88 |
| 3-methylphenol | 108-39-4 | 99.1 | 115.7.4P | 499.7 ± 6.92 |
| 4-methylphenol | 106-44-5 | 99.5 | 116.7.1P | 500.5 ± 6.93 |
| naphthalene | 91-20-3 | 99.8 | 26.9.2P | 998.8 ± 5.73 |
| 2-nitroaniline | 88-74-4 | 99.7 | 69.29.1P | 1003 ± 9.82 |
| 3-nitroaniline | 99-09-2 | 100 | 70.7.2P | 1000 ± 9.79 |
| 4-nitroaniline | 100-01-6 | 99.7 | 71.29.1P | 999.8 ± 9.79 |
| nitrobenzene | 98-95-3 | 100 | 94.7.1P | 1001 ± 13.87 |
| 2-nitrophenol | 88-75-5 | 99.1 | 108.29.1P | 1000 ± 13.85 |
| 4-nitrophenol | 100-02-7 | 99.9 | 109.8.1P | 1000 ± 5.74 |
| N-nitrosodimethylamine | 62-75-9 | 99.5 | 57.3.19P | 999.4 ± 14.68 |
| N-nitrosodi-n-propylamine | 621-64-7 | 99.8 | 59.286.1P | 1001 ± 17.07 |
| pentachlorophenol | 87-86-5 | 99 | 110.1.7P | 1000 ± 13.85 |
| phenanthrene | 85-01-8 | 98.9 | 27.1.3P | 1002 ± 13.99 |
| phenol | 108-95-2 | 100 | 112.7.1P | 1011 ± 13.97 |
| pyrene | 129-00-0 | 98.5 | 28.9.1.1P | 1011 ± 5.8 |
| pyridine | 110-86-1 | 100 | 101.24.1P | 999.6 ± 9.74 |
| 2,3,4,6-Tetrachlorophenol | 58-90-2 | 91.8 | 120.421.1P | 999.7 ± 13.96 |

*Not a certified value

Manufactured by o2si smart solutions, Accredited to ISO 9001:2008 by NSF and ISO/IEC 17025:2005 (Certification No. 3031.01) and ISO Guide 34:2009 (Certification No. 3031.02) by A2LA

Certified By:



Clint Tipton
Chemist

All weights are traceable through N. I. S. T. Test No. 822/264157-00.
Concentration (correct for purity) and uncertainty (95% confidence) values listed are determined gravimetrically.

Certificate of Analysis

Page 4 of 4

Catalog No.: Z-110381-01

Lot No.: 478725

Expiration Date: 3/29/2027

| Compound | CAS No. | Purity (%) | Compound Lot No. | Concentration, mg/L |
|------------------------|----------|------------|------------------|---------------------|
| 1,2,4-trichlorobenzene | 120-82-1 | 99.6 | 54.29.1P | 999.2 ± 9.79 |
| 2,4,5-trichlorophenol | 95-95-4 | 96.5 | 121.7.1.1P | 1010 ± 13.99 |
| 2,4,6-trichlorophenol | 88-06-2 | 99.6 | 113.7.1P | 1001 ± 13.87 |

*Not a certified value

Manufactured by o2si smart solutions, Accredited to ISO 9001:2008 by NSF and ISO/IEC 17025:2005 (Certification No. 3031.01) and ISO Guide 34:2009 (Certification No. 3031.02) by A2LA

All weights are traceable through N. I. S. T. Test No. 822/264157-00.
Concentration (correct for purity) and uncertainty (95% confidence) values listed are determined gravimetrically.

Certified By:



Clint Tipton
Chemist



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Received on
03/10/22
by
CG
S10242
to
S10247

Catalog No. : 31615 **Lot No.:** A0182667

Description : GC/MS Tuning Mixture
GC/MS Tuning Mixture 1,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : March 31, 2025 **Storage:** 10°C or colder

Handling: Contains carcinogen/reproductive toxin. **Ship:** Ambient

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) |
|---------------|--|-----------------------------|--|
| 1 | Pentachlorophenol CAS # 87-86-5 (Lot 211229RSR) Purity 99% | 1,003.6 µg/mL | +/- 5.8897 µg/mL Gravimetric +/- 45.7132 µg/mL Unstressed +/- 66.0037 µg/mL Stressed |
| 2 | DFTPP (Decafluorotriphenylphosphine) CAS # 5074-71-5 (Lot Q117-147) Purity 95% | 1,006.6 µg/mL | +/- 5.9074 µg/mL Gravimetric +/- 45.8508 µg/mL Unstressed +/- 66.2023 µg/mL Stressed |
| 3 | Benzidine CAS # 92-87-5 (Lot 211228JLM) Purity 99% | 1,008.4 µg/mL | +/- 5.9179 µg/mL Gravimetric +/- 45.9318 µg/mL Unstressed +/- 66.3193 µg/mL Stressed |
| 4 | 4,4'-DDT CAS # 50-29-3 (Lot 210916JLM) Purity 99% | 1,007.6 µg/mL | +/- 5.9132 µg/mL Gravimetric +/- 45.8954 µg/mL Unstressed +/- 66.2667 µg/mL Stressed |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

Inj. Temp:

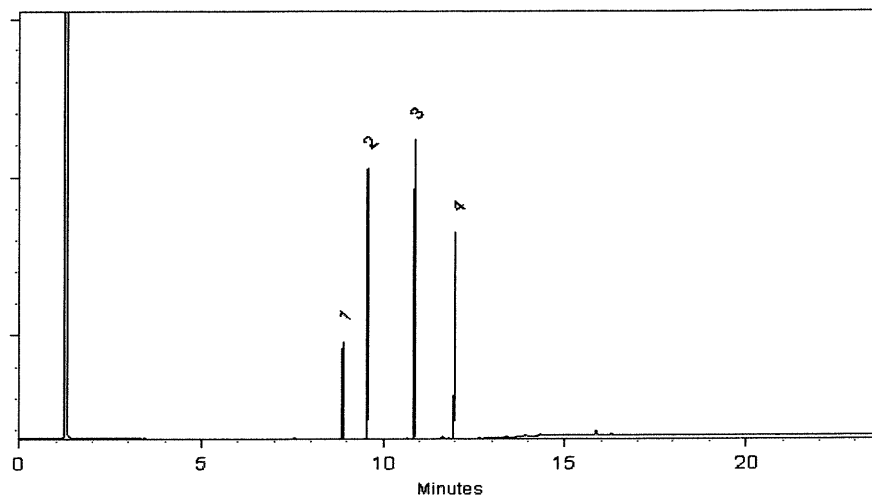
250°C

Det. Temp:

330°C

Det. Type:

FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Morgan Craighead - Mix Technician

Date Mixed: 08-Mar-2022

Balance: B345965662

Marlene Cowan - Operations Tech I

Date Passed: 10-Mar-2022

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



CERTIFIED REFERENCE MATERIAL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

Gravimetric Certificate



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 555871 Lot No.: A0185300
Description : Custom 4-Nitrophenol Standard
Custom 4-Nitrophenol Standard 25,000µg/mL, Methanol, 1mL/ampul
Container Size : 2 mL Pkg Amt: > 1 mL
Expiration Date : May 31, 2025 Storage: 10°C or colder
Ship: Ambient

Received by
CG on
05/18/22
S10393
+0
S10402

CERTIFIED VALUES

| Component # | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) |
|-------------|----------------|-----------------------------|--------------------------------------|
| 1 | 4-Nitrophenol | 25,060.0 µg/mL | +/- 231.9100 µg/mL Gravimetric |
| | CAS # 100-02-7 | | +/- 753.2622 µg/mL Unstressed |
| | Purity 99% | | +/- 905.6020 µg/mL Stressed |

Solvent: Methanol
CAS # 67-56-1
Purity 99%

Katelyn McGinnis - Operations Tech I

Date Mixed: 16-May-2022 Balance: 1128342314

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k \sqrt{U_{gravimetric}^2 + U_{homogeneity}^2 + U_{storage\ stability}^2 + U_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

| Label Conditions | Standard Conditions | Non-Standard Conditions |
|---|---------------------|-------------------------|
| 25°C Nominal (Room Temperature) | < 60°C | ≥ 60°C up to 7 days |
| 10°C or colder (Refrigerate) | < 40°C | ≥ 40°C up to 7 days |
| 0°C or colder (Freezer) -20°C or colder (Deep Freezer) | < 25°C | ≥ 25°C up to 7 days |

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampules. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Gravimetric Certificate



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Received by
CG
on
07/05/22
S 10583
to
S 10592

Catalog No.: 555868 Lot No.: A0186373
Description: Custom Benzidine Standard
Custom Benzidine Standard 25,000µg/mL, Methanol, 1mL/ampul
Container Size: 2 mL Pkg Amt: > 1 mL
Expiration Date: June 30, 2025 Storage: 10°C or colder
Handling: Contains carcinogen/reproductive toxin. Ship: Ambient

CERTIFIED VALUES

| Component # | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) |
|-------------|-------------------------------|-----------------------------|--------------------------------------|
| 1 | Benzidine | 25,200.0 µg/mL | +/- 233.2055 µg/mL Gravimetric |
| | CAS # 92-87-5 (Lot 220511RSR) | | +/- 351.6606 µg/mL Unstressed |
| | Purity 99% | | +/- 512.6054 µg/mL Stressed |

Solvent: Methanol
CAS # 67-56-1
Purity 99%

Tom Suckal - Mix Technician

Date Mixed: 16-Jun-2022 Balance: 1122030677

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified combined stressed uncertainty value (includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ stressed} = k \sqrt{U_{gravimetric}^2 + U_{homogeneity}^2 + U_{storage\ stability}^2 + U_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- It is important to note that the shipping stability uncertainty was obtained under temperature extremes for specific time intervals; therefore, the certified combined stressed uncertainty value should only be applied to the product if it was stored at non-standard temperature conditions up to and including 7 days. Contact Restek Technical Service at www.restek.com/Contact-Us for use recommendations if your shipment was in-transit for more than 7 days at non-standard temperature conditions.
- Apply the certified combined unstressed uncertainty value if the product was received under standard shipping conditions. Apply the certified combined stressed uncertainty value if the product was received under non-standard conditions as specified below.

| Label Conditions | Standard Conditions | Non-Standard Conditions |
|---|---------------------|-------------------------|
| 25°C Nominal (Room Temperature) | < 60°C | ≥ 60°C up to 7 days |
| 10°C or colder (Refrigerate) | < 40°C | ≥ 40°C up to 7 days |
| 0°C or colder (Freezer) -20°C or colder (Deep Freezer) | < 25°C | ≥ 25°C up to 7 days |

- Separate (not combined) uncertainty values for gravimetric uncertainty are also displayed on the certificate, if needed, separate homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty values are available by contacting Restek Technical Service at www.restek.com/Contact-Us.
- The packaged amount is the minimum sample size for which uncertainty is valid. The ampules are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampules. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



ISO 17034 Accredited
Reference Material Producer
Certificate #3222.01



ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31087 **Lot No.:** A0188108
Description : Acid Surrogate Mix (4/89 SOW)
Acid Surrogate 10,000µg/mL, Methanol, 5mL/ampul
Container Size : 5 mL **Pkg Amt:** > 5 mL
Expiration Date : August 31, 2030 **Storage:** 10°C or colder
Ship: Ambient

Received by
CG on
12/28/22
S10951
to
S10980

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) |
|---------------|--|-----------------------------|---|
| 1 | 2-Fluorophenol CAS # 367-12-4 Purity 99% (Lot STBF3761V) | 10,088.5 µg/mL | +/- 58.6554 µg/mL Gravimetric +/- 294.4162 µg/mL Unstressed +/- 357.2628 µg/mL Stressed |
| 2 | Phenol-d6 CAS # 13127-88-3 Purity 99% (Lot PR-31262) | 10,043.3 µg/mL | +/- 58.3923 µg/mL Gravimetric +/- 293.0957 µg/mL Unstressed +/- 355.6603 µg/mL Stressed |
| 3 | 2,4,6-Tribromophenol CAS # 118-79-6 Purity 99% (Lot MKCJ7664) | 10,010.0 µg/mL | +/- 58.1990 µg/mL Gravimetric +/- 292.1253 µg/mL Unstressed +/- 354.4829 µg/mL Stressed |

Solvent: Methanol
CAS # 67-56-1
Purity 99%

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:

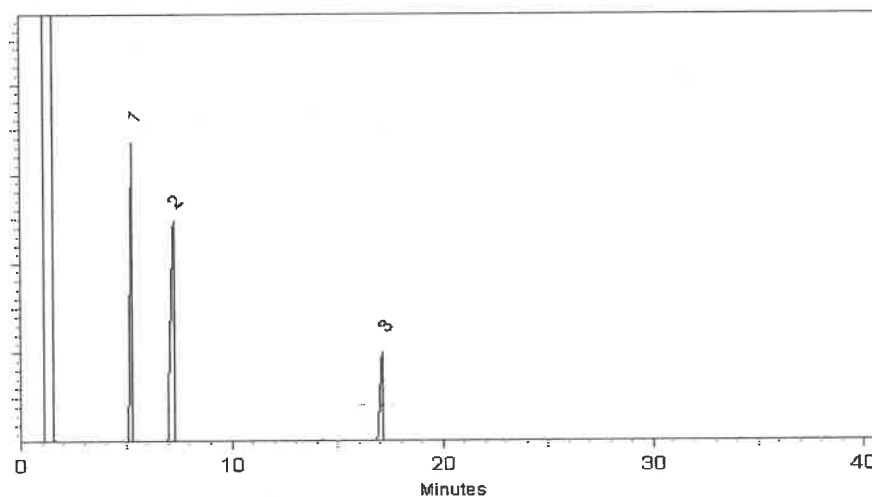
250°C

Det. Temp:

330°C

Det. Type:

FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Morgan Craighead - Mix Technician

Date Mixed: 02-Aug-2022 Balance: 1127510105


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 05-Aug-2022

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



ISO 17034 Accredited
Reference Material Producer
Certificate #3222.01



ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31087 **Lot No.:** A0188108
Description : Acid Surrogate Mix (4/89 SOW)
Acid Surrogate 10,000µg/mL, Methanol, 5mL/ampul
Container Size : 5 mL **Pkg Amt:** > 5 mL
Expiration Date : August 31, 2030 **Storage:** 10°C or colder
Ship: Ambient

Received by
CG on
12/28/22
S10951
to
S10980

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) |
|---------------|--|-----------------------------|---|
| 1 | 2-Fluorophenol CAS # 367-12-4 Purity 99% (Lot STBF3761V) | 10,088.5 µg/mL | +/- 58.6554 µg/mL Gravimetric +/- 294.4162 µg/mL Unstressed +/- 357.2628 µg/mL Stressed |
| 2 | Phenol-d6 CAS # 13127-88-3 Purity 99% (Lot PR-31262) | 10,043.3 µg/mL | +/- 58.3923 µg/mL Gravimetric +/- 293.0957 µg/mL Unstressed +/- 355.6603 µg/mL Stressed |
| 3 | 2,4,6-Tribromophenol CAS # 118-79-6 Purity 99% (Lot MKCJ7664) | 10,010.0 µg/mL | +/- 58.1990 µg/mL Gravimetric +/- 292.1253 µg/mL Unstressed +/- 354.4829 µg/mL Stressed |

Solvent: Methanol
CAS # 67-56-1
Purity 99%

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:

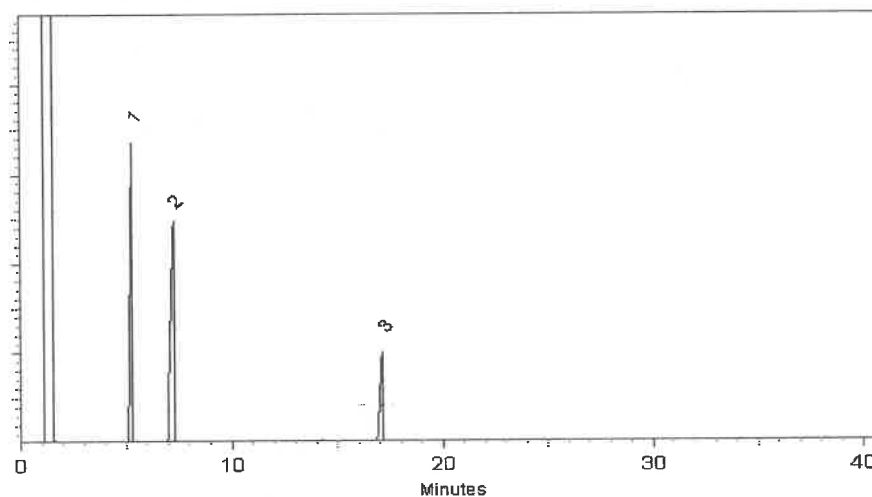
250°C

Det. Temp:

330°C

Det. Type:

FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Morgan Craighead - Mix Technician

Date Mixed: 02-Aug-2022

Balance: 1127510105

Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 05-Aug-2022

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



ISO 17034 Accredited
Reference Material Producer
Certificate #3222.01



ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31087 **Lot No.:** A0188108

Description : Acid Surrogate Mix (4/89 SOW)

Acid Surrogate 10,000µg/mL, Methanol, 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : August 31, 2030 **Storage:** 10°C or colder

Ship: Ambient

Received by
CG on
12/28/22
S10951
FO
S10980

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) |
|---------------|--|-----------------------------|---|
| 1 | 2-Fluorophenol CAS # 367-12-4 Purity 99% (Lot STBF3761V) | 10,088.5 µg/mL | +/- 58.6554 µg/mL Gravimetric +/- 294.4162 µg/mL Unstressed +/- 357.2628 µg/mL Stressed |
| 2 | Phenol-d6 CAS # 13127-88-3 Purity 99% (Lot PR-31262) | 10,043.3 µg/mL | +/- 58.3923 µg/mL Gravimetric +/- 293.0957 µg/mL Unstressed +/- 355.6603 µg/mL Stressed |
| 3 | 2,4,6-Tribromophenol CAS # 118-79-6 Purity 99% (Lot MKCJ7664) | 10,010.0 µg/mL | +/- 58.1990 µg/mL Gravimetric +/- 292.1253 µg/mL Unstressed +/- 354.4829 µg/mL Stressed |

Solvent: Methanol
CAS # 67-56-1
Purity 99%

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:

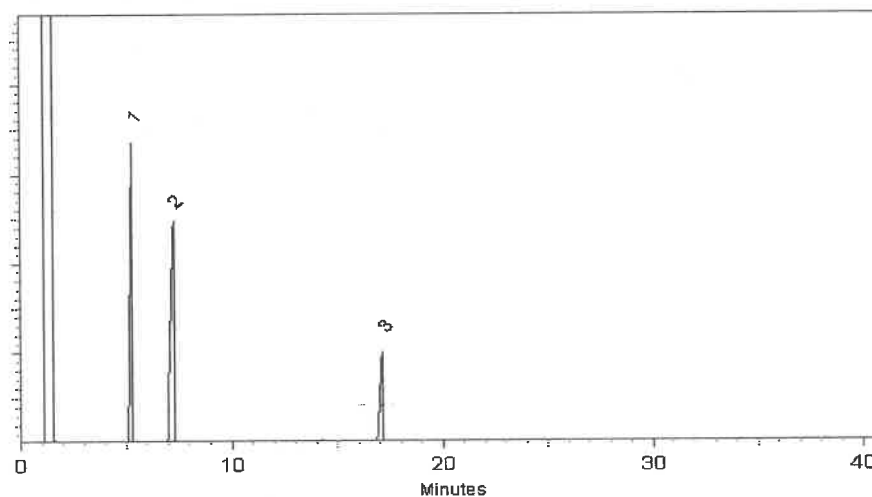
250°C

Det. Temp:

330°C

Det. Type:

FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Morgan Craighead - Mix Technician

Date Mixed: 02-Aug-2022 Balance: 1127510105


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 05-Aug-2022

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Received by
CG on
12/28/22
S10951
to
S10980

Catalog No. : 31087 **Lot No.:** A0188108

Description : Acid Surrogate Mix (4/89 SOW)
Acid Surrogate 10,000µg/mL, Methanol, 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : August 31, 2030 **Storage:** 10°C or colder
Ship: Ambient

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) |
|---------------|--|-----------------------------|---|
| 1 | 2-Fluorophenol CAS # 367-12-4 Purity 99% (Lot STBF3761V) | 10,088.5 µg/mL | +/- 58.6554 µg/mL Gravimetric +/- 294.4162 µg/mL Unstressed +/- 357.2628 µg/mL Stressed |
| 2 | Phenol-d6 CAS # 13127-88-3 Purity 99% (Lot PR-31262) | 10,043.3 µg/mL | +/- 58.3923 µg/mL Gravimetric +/- 293.0957 µg/mL Unstressed +/- 355.6603 µg/mL Stressed |
| 3 | 2,4,6-Tribromophenol CAS # 118-79-6 Purity 99% (Lot MKCJ7664) | 10,010.0 µg/mL | +/- 58.1990 µg/mL Gravimetric +/- 292.1253 µg/mL Unstressed +/- 354.4829 µg/mL Stressed |

Solvent: Methanol
CAS # 67-56-1
Purity 99%

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:

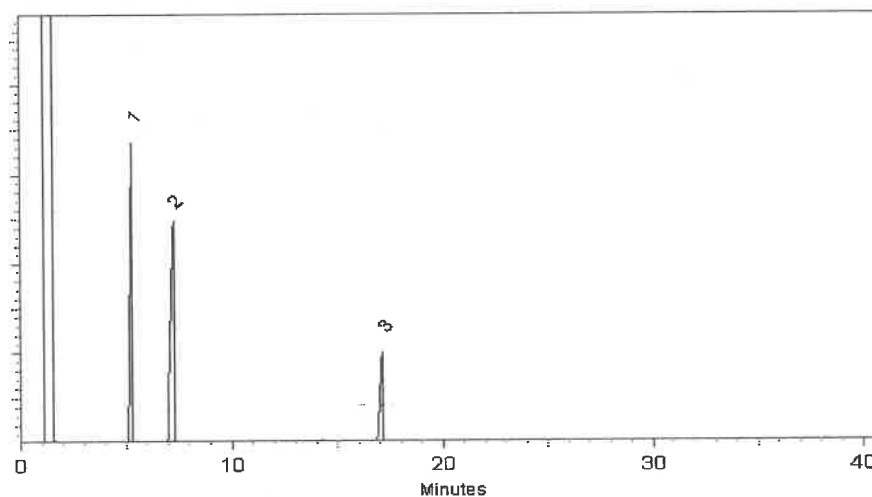
250°C

Det. Temp:

330°C

Det. Type:

FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Morgan Craighead - Mix Technician

Date Mixed: 02-Aug-2022 Balance: 1127510105


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 05-Aug-2022

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



ISO 17034 Accredited
Reference Material Producer
Certificate #3222.01



ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31087 **Lot No.:** A0188108

Description : Acid Surrogate Mix (4/89 SOW)

Acid Surrogate 10,000µg/mL, Methanol, 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : August 31, 2030 **Storage:** 10°C or colder

Ship: Ambient

Received by
CG on
12/28/22
S10951
FO
S10980

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) |
|---------------|--|-----------------------------|---|
| 1 | 2-Fluorophenol CAS # 367-12-4 Purity 99% (Lot STBF3761V) | 10,088.5 µg/mL | +/- 58.6554 µg/mL Gravimetric +/- 294.4162 µg/mL Unstressed +/- 357.2628 µg/mL Stressed |
| 2 | Phenol-d6 CAS # 13127-88-3 Purity 99% (Lot PR-31262) | 10,043.3 µg/mL | +/- 58.3923 µg/mL Gravimetric +/- 293.0957 µg/mL Unstressed +/- 355.6603 µg/mL Stressed |
| 3 | 2,4,6-Tribromophenol CAS # 118-79-6 Purity 99% (Lot MKCJ7664) | 10,010.0 µg/mL | +/- 58.1990 µg/mL Gravimetric +/- 292.1253 µg/mL Unstressed +/- 354.4829 µg/mL Stressed |

Solvent: Methanol
CAS # 67-56-1
Purity 99%

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:

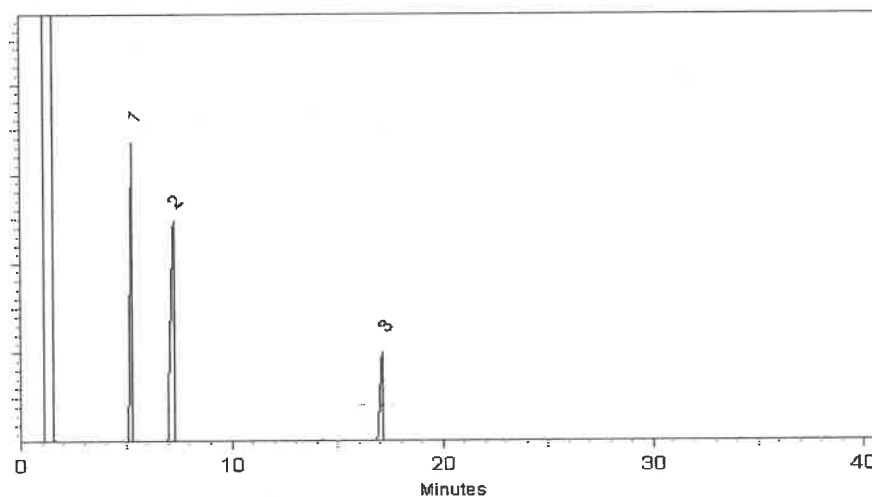
250°C

Det. Temp:

330°C

Det. Type:

FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Morgan Craighead - Mix Technician

Date Mixed: 02-Aug-2022

Balance: 1127510105

Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 05-Aug-2022

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



ISO 17034 Accredited
Reference Material Producer
Certificate #3222.01



ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31087 **Lot No.:** A0188108

Description : Acid Surrogate Mix (4/89 SOW)

Acid Surrogate 10,000µg/mL, Methanol, 5mL/ampul

Container Size : 5 mL **Pkg Amt:** > 5 mL

Expiration Date : August 31, 2030 **Storage:** 10°C or colder

Ship: Ambient

Received by
CG on
12/28/22
S10951
FO
S10980

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) |
|---------------|--|-----------------------------|---|
| 1 | 2-Fluorophenol CAS # 367-12-4 Purity 99% (Lot STBF3761V) | 10,088.5 µg/mL | +/- 58.6554 µg/mL Gravimetric +/- 294.4162 µg/mL Unstressed +/- 357.2628 µg/mL Stressed |
| 2 | Phenol-d6 CAS # 13127-88-3 Purity 99% (Lot PR-31262) | 10,043.3 µg/mL | +/- 58.3923 µg/mL Gravimetric +/- 293.0957 µg/mL Unstressed +/- 355.6603 µg/mL Stressed |
| 3 | 2,4,6-Tribromophenol CAS # 118-79-6 Purity 99% (Lot MKCJ7664) | 10,010.0 µg/mL | +/- 58.1990 µg/mL Gravimetric +/- 292.1253 µg/mL Unstressed +/- 354.4829 µg/mL Stressed |

Solvent: Methanol
CAS # 67-56-1
Purity 99%

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:

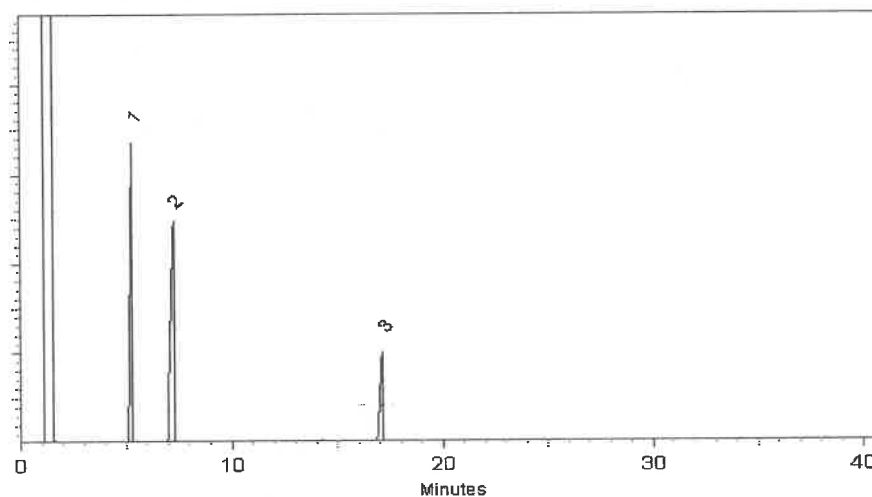
250°C

Det. Temp:

330°C

Det. Type:

FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Morgan Craighead - Mix Technician

Date Mixed: 02-Aug-2022

Balance: 1127510105

Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 05-Aug-2022

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31086 **Lot No.:** A0189418
Description : B/N Surrogate Mix (4/89 SOW)
Base Neutral Surrogate 5000µg/mL, Methylene Chloride, 5mL/ampul
Container Size : 5 mL **Pkg Amt:** > 5 mL
Expiration Date : August 31, 2028 **Storage:** 10°C or colder
Handling: Sonicate prior to use. **Ship:** Ambient

Received by
CG on
12/28/22
\$10981
to
S11010

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) |
|---------------|--|-----------------------------|---|
| 1 | Nitrobenzene-d5 CAS # 4165-60-0 (Lot PR-29940A) Purity 99% | 5,009.8 µg/mL | +/- 29.1271 µg/mL Gravimetric +/- 225.6421 µg/mL Unstressed +/- 250.3778 µg/mL Stressed |
| 2 | 2-Fluorobiphenyl CAS # 321-60-8 (Lot 00021384) Purity 99% | 5,026.6 µg/mL | +/- 29.2250 µg/mL Gravimetric +/- 226.4003 µg/mL Unstressed +/- 251.2191 µg/mL Stressed |
| 3 | p-Terphenyl-d14 CAS # 1718-51-0 (Lot PR-30504) Purity 99% | 5,027.3 µg/mL | +/- 29.2289 µg/mL Gravimetric +/- 226.4304 µg/mL Unstressed +/- 251.2524 µg/mL Stressed |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Tech Tips:

Due to the limited solubility of p-terphenyl-d14 in methanol, we do not recommend that this mixture be diluted in methanol.

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:

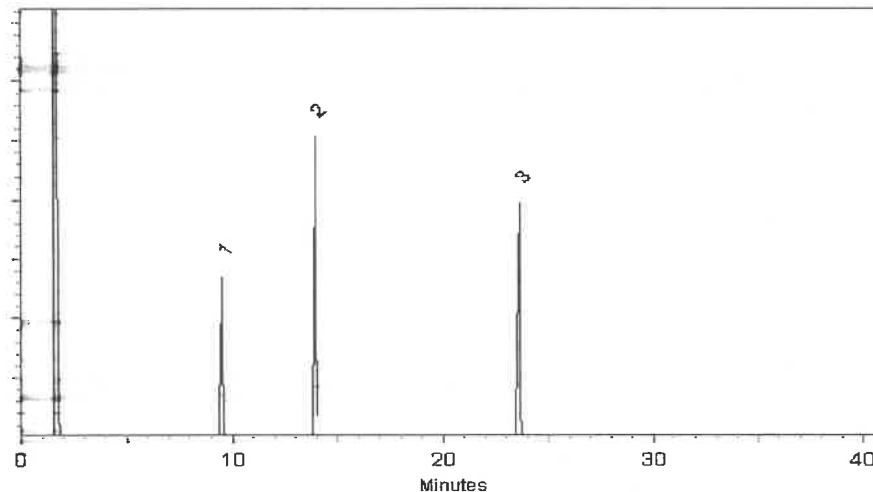
250°C

Det. Temp:

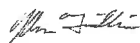
330°C

Det. Type:

FID




This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


John Friedline - Operations Technician I

Date Mixed: 09-Sep-2022

Balance: 1128353505


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 13-Sep-2022

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31086 **Lot No.:** A0189418
Description : B/N Surrogate Mix (4/89 SOW)
Base Neutral Surrogate 5000µg/mL, Methylene Chloride, 5mL/ampul
Container Size : 5 mL **Pkg Amt:** > 5 mL
Expiration Date : August 31, 2028 **Storage:** 10°C or colder
Handling: Sonicate prior to use. **Ship:** Ambient

Received by
CG on
12/28/22
\$10981
to
S11010

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) |
|---------------|--|-----------------------------|---|
| 1 | Nitrobenzene-d5 CAS # 4165-60-0 (Lot PR-29940A) Purity 99% | 5,009.8 µg/mL | +/- 29.1271 µg/mL Gravimetric +/- 225.6421 µg/mL Unstressed +/- 250.3778 µg/mL Stressed |
| 2 | 2-Fluorobiphenyl CAS # 321-60-8 (Lot 00021384) Purity 99% | 5,026.6 µg/mL | +/- 29.2250 µg/mL Gravimetric +/- 226.4003 µg/mL Unstressed +/- 251.2191 µg/mL Stressed |
| 3 | p-Terphenyl-d14 CAS # 1718-51-0 (Lot PR-30504) Purity 99% | 5,027.3 µg/mL | +/- 29.2289 µg/mL Gravimetric +/- 226.4304 µg/mL Unstressed +/- 251.2524 µg/mL Stressed |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Tech Tips:

Due to the limited solubility of p-terphenyl-d14 in methanol, we do not recommend that this mixture be diluted in methanol.

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:

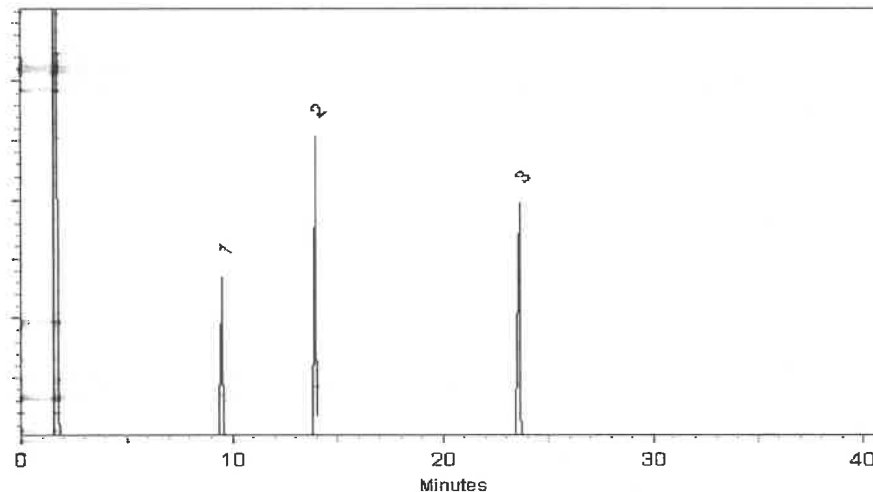
250°C

Det. Temp:

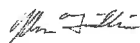
330°C

Det. Type:

FID




This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


John Friedline - Operations Technician I

Date Mixed: 09-Sep-2022

Balance: 1128353505


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 13-Sep-2022

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Received by
CG on
12/28/22
\$10981
to
S11010

Catalog No. : 31086 **Lot No.:** A0189418
Description : B/N Surrogate Mix (4/89 SOW)
Base Neutral Surrogate 5000µg/mL, Methylene Chloride, 5mL/ampul
Container Size : 5 mL **Pkg Amt:** > 5 mL
Expiration Date : August 31, 2028 **Storage:** 10°C or colder
Handling: Sonicate prior to use. **Ship:** Ambient

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) |
|---------------|--|-----------------------------|---|
| 1 | Nitrobenzene-d5 CAS # 4165-60-0 (Lot PR-29940A) Purity 99% | 5,009.8 µg/mL | +/- 29.1271 µg/mL Gravimetric +/- 225.6421 µg/mL Unstressed +/- 250.3778 µg/mL Stressed |
| 2 | 2-Fluorobiphenyl CAS # 321-60-8 (Lot 00021384) Purity 99% | 5,026.6 µg/mL | +/- 29.2250 µg/mL Gravimetric +/- 226.4003 µg/mL Unstressed +/- 251.2191 µg/mL Stressed |
| 3 | p-Terphenyl-d14 CAS # 1718-51-0 (Lot PR-30504) Purity 99% | 5,027.3 µg/mL | +/- 29.2289 µg/mL Gravimetric +/- 226.4304 µg/mL Unstressed +/- 251.2524 µg/mL Stressed |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Tech Tips:

Due to the limited solubility of p-terphenyl-d14 in methanol, we do not recommend that this mixture be diluted in methanol.

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:

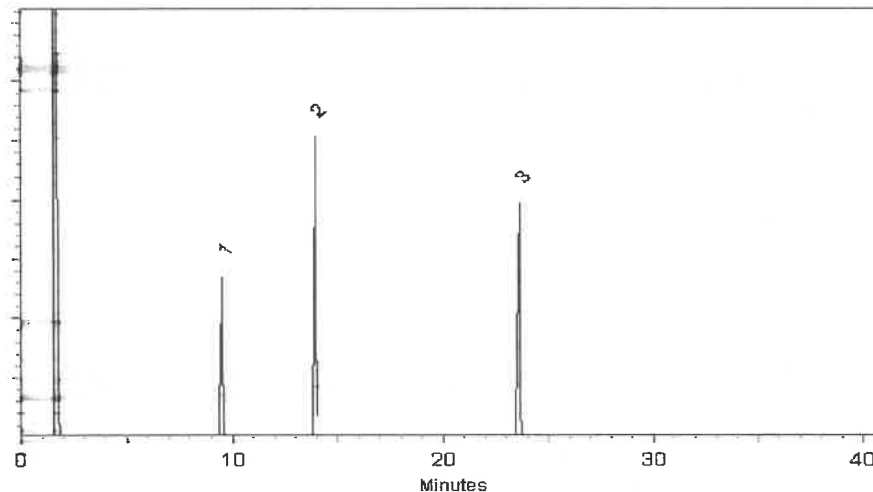
250°C

Det. Temp:

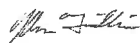
330°C

Det. Type:

FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


John Friedline - Operations Technician I

Date Mixed: 09-Sep-2022

Balance: 1128353505


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 13-Sep-2022

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Received by
CG on
12/28/22
\$10981
to
\$11010

Catalog No. : 31086 **Lot No.:** A0189418
Description : B/N Surrogate Mix (4/89 SOW)
Base Neutral Surrogate 5000µg/mL, Methylene Chloride, 5mL/ampul
Container Size : 5 mL **Pkg Amt:** > 5 mL
Expiration Date : August 31, 2028 **Storage:** 10°C or colder
Handling: Sonicate prior to use. **Ship:** Ambient

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) |
|---------------|--|-----------------------------|---|
| 1 | Nitrobenzene-d5 CAS # 4165-60-0 (Lot PR-29940A) Purity 99% | 5,009.8 µg/mL | +/- 29.1271 µg/mL Gravimetric +/- 225.6421 µg/mL Unstressed +/- 250.3778 µg/mL Stressed |
| 2 | 2-Fluorobiphenyl CAS # 321-60-8 (Lot 00021384) Purity 99% | 5,026.6 µg/mL | +/- 29.2250 µg/mL Gravimetric +/- 226.4003 µg/mL Unstressed +/- 251.2191 µg/mL Stressed |
| 3 | p-Terphenyl-d14 CAS # 1718-51-0 (Lot PR-30504) Purity 99% | 5,027.3 µg/mL | +/- 29.2289 µg/mL Gravimetric +/- 226.4304 µg/mL Unstressed +/- 251.2524 µg/mL Stressed |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Tech Tips:

Due to the limited solubility of p-terphenyl-d14 in methanol, we do not recommend that this mixture be diluted in methanol.

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:

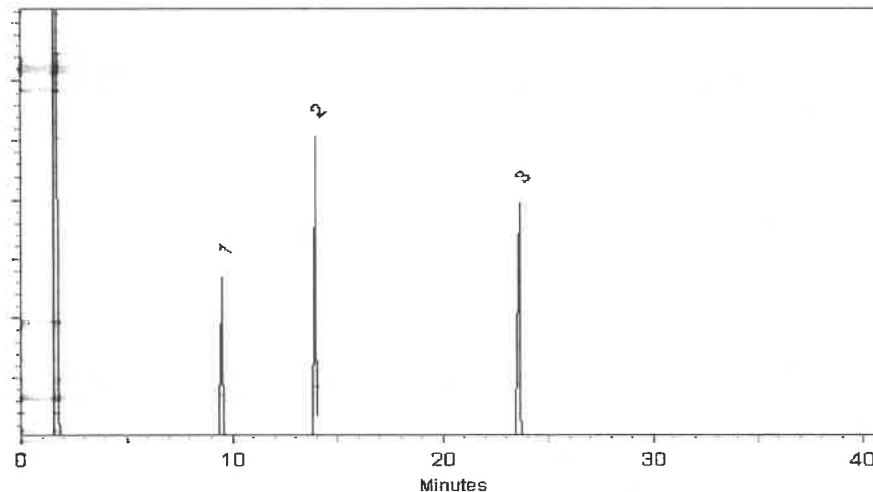
250°C

Det. Temp:

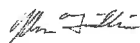
330°C

Det. Type:

FID




This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


John Friedline - Operations Technician I

Date Mixed: 09-Sep-2022

Balance: 1128353505


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 13-Sep-2022

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31086 **Lot No.:** A0189418
Description : B/N Surrogate Mix (4/89 SOW)
Base Neutral Surrogate 5000µg/mL, Methylene Chloride, 5mL/ampul
Container Size : 5 mL **Pkg Amt:** > 5 mL
Expiration Date : August 31, 2028 **Storage:** 10°C or colder
Handling: Sonicate prior to use. **Ship:** Ambient

Received by
CG on
12/28/22
\$10981
to
S11010

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) |
|---------------|--|-----------------------------|---|
| 1 | Nitrobenzene-d5 CAS # 4165-60-0 (Lot PR-29940A) Purity 99% | 5,009.8 µg/mL | +/- 29.1271 µg/mL Gravimetric +/- 225.6421 µg/mL Unstressed +/- 250.3778 µg/mL Stressed |
| 2 | 2-Fluorobiphenyl CAS # 321-60-8 (Lot 00021384) Purity 99% | 5,026.6 µg/mL | +/- 29.2250 µg/mL Gravimetric +/- 226.4003 µg/mL Unstressed +/- 251.2191 µg/mL Stressed |
| 3 | p-Terphenyl-d14 CAS # 1718-51-0 (Lot PR-30504) Purity 99% | 5,027.3 µg/mL | +/- 29.2289 µg/mL Gravimetric +/- 226.4304 µg/mL Unstressed +/- 251.2524 µg/mL Stressed |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Tech Tips:

Due to the limited solubility of p-terphenyl-d14 in methanol, we do not recommend that this mixture be diluted in methanol.

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:

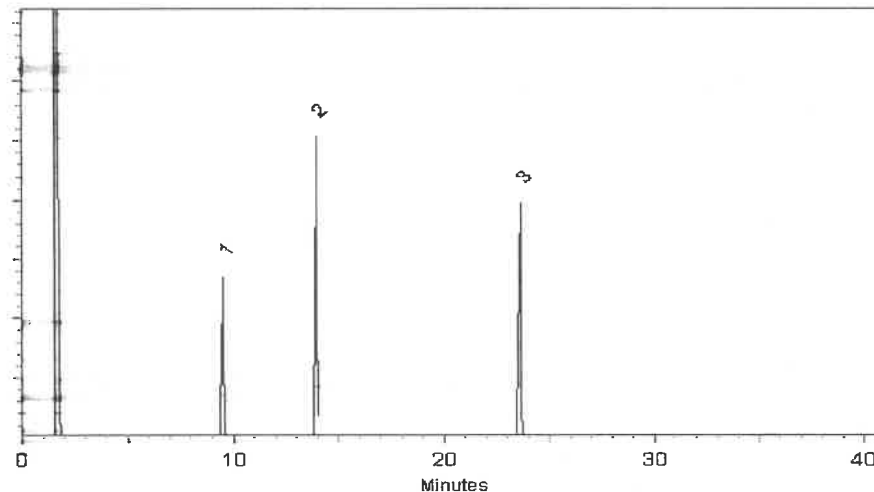
250°C

Det. Temp:

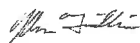
330°C

Det. Type:

FID




This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


John Friedline - Operations Technician I

Date Mixed: 09-Sep-2022

Balance: 1128353505


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 13-Sep-2022

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31086 **Lot No.:** A0189418
Description : B/N Surrogate Mix (4/89 SOW)
Base Neutral Surrogate 5000µg/mL, Methylene Chloride, 5mL/ampul
Container Size : 5 mL **Pkg Amt:** > 5 mL
Expiration Date : August 31, 2028 **Storage:** 10°C or colder
Handling: Sonicate prior to use. **Ship:** Ambient

Received by
CG on
12/28/22
\$10981
to
S11010

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) |
|---------------|--|-----------------------------|---|
| 1 | Nitrobenzene-d5 CAS # 4165-60-0 (Lot PR-29940A) Purity 99% | 5,009.8 µg/mL | +/- 29.1271 µg/mL Gravimetric +/- 225.6421 µg/mL Unstressed +/- 250.3778 µg/mL Stressed |
| 2 | 2-Fluorobiphenyl CAS # 321-60-8 (Lot 00021384) Purity 99% | 5,026.6 µg/mL | +/- 29.2250 µg/mL Gravimetric +/- 226.4003 µg/mL Unstressed +/- 251.2191 µg/mL Stressed |
| 3 | p-Terphenyl-d14 CAS # 1718-51-0 (Lot PR-30504) Purity 99% | 5,027.3 µg/mL | +/- 29.2289 µg/mL Gravimetric +/- 226.4304 µg/mL Unstressed +/- 251.2524 µg/mL Stressed |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Tech Tips:

Due to the limited solubility of p-terphenyl-d14 in methanol, we do not recommend that this mixture be diluted in methanol.

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:

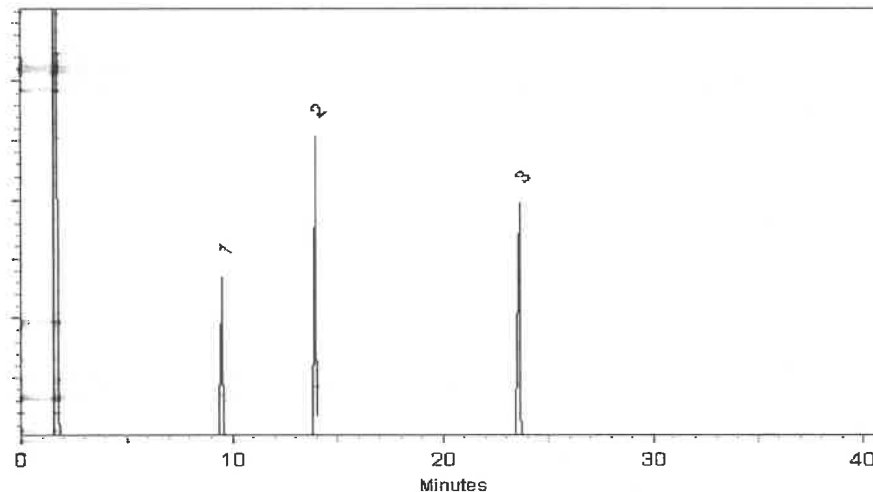
250°C

Det. Temp:

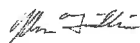
330°C

Det. Type:

FID




This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


John Friedline - Operations Technician I

Date Mixed: 09-Sep-2022

Balance: 1128353505


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 13-Sep-2022

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31086 **Lot No.:** A0189418
Description : B/N Surrogate Mix (4/89 SOW)
Base Neutral Surrogate 5000µg/mL, Methylene Chloride, 5mL/ampul
Container Size : 5 mL **Pkg Amt:** > 5 mL
Expiration Date : August 31, 2028 **Storage:** 10°C or colder
Handling: Sonicate prior to use. **Ship:** Ambient

Received by
CG on
12/28/22
\$10981
to
S11010

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) |
|---------------|--|-----------------------------|---|
| 1 | Nitrobenzene-d5 CAS # 4165-60-0 (Lot PR-29940A) Purity 99% | 5,009.8 µg/mL | +/- 29.1271 µg/mL Gravimetric +/- 225.6421 µg/mL Unstressed +/- 250.3778 µg/mL Stressed |
| 2 | 2-Fluorobiphenyl CAS # 321-60-8 (Lot 00021384) Purity 99% | 5,026.6 µg/mL | +/- 29.2250 µg/mL Gravimetric +/- 226.4003 µg/mL Unstressed +/- 251.2191 µg/mL Stressed |
| 3 | p-Terphenyl-d14 CAS # 1718-51-0 (Lot PR-30504) Purity 99% | 5,027.3 µg/mL | +/- 29.2289 µg/mL Gravimetric +/- 226.4304 µg/mL Unstressed +/- 251.2524 µg/mL Stressed |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Tech Tips:

Due to the limited solubility of p-terphenyl-d14 in methanol, we do not recommend that this mixture be diluted in methanol.

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:

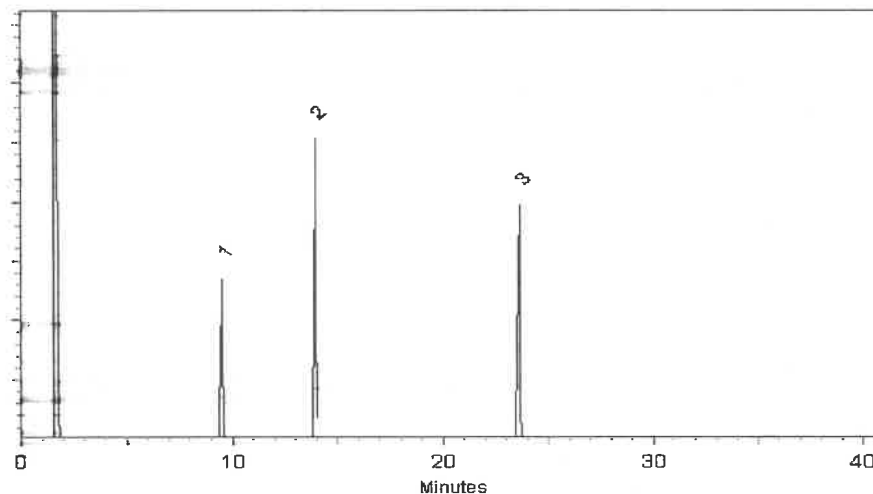
250°C

Det. Temp:

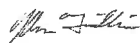
330°C

Det. Type:

FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


John Friedline - Operations Technician I

Date Mixed: 09-Sep-2022

Balance: 1128353505


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 13-Sep-2022

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31086 **Lot No.:** A0189418
Description : B/N Surrogate Mix (4/89 SOW)
Base Neutral Surrogate 5000µg/mL, Methylene Chloride, 5mL/ampul
Container Size : 5 mL **Pkg Amt:** > 5 mL
Expiration Date : August 31, 2028 **Storage:** 10°C or colder
Handling: Sonicate prior to use. **Ship:** Ambient

Received by
CG on
12/28/22
\$10981
to
S11010

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) |
|---------------|--|-----------------------------|---|
| 1 | Nitrobenzene-d5 CAS # 4165-60-0 (Lot PR-29940A) Purity 99% | 5,009.8 µg/mL | +/- 29.1271 µg/mL Gravimetric +/- 225.6421 µg/mL Unstressed +/- 250.3778 µg/mL Stressed |
| 2 | 2-Fluorobiphenyl CAS # 321-60-8 (Lot 00021384) Purity 99% | 5,026.6 µg/mL | +/- 29.2250 µg/mL Gravimetric +/- 226.4003 µg/mL Unstressed +/- 251.2191 µg/mL Stressed |
| 3 | p-Terphenyl-d14 CAS # 1718-51-0 (Lot PR-30504) Purity 99% | 5,027.3 µg/mL | +/- 29.2289 µg/mL Gravimetric +/- 226.4304 µg/mL Unstressed +/- 251.2524 µg/mL Stressed |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Tech Tips:

Due to the limited solubility of p-terphenyl-d14 in methanol, we do not recommend that this mixture be diluted in methanol.

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

40°C (hold 2 min.) to 330°C
@ 10°C/min. (hold 10 min.)

Inj. Temp:

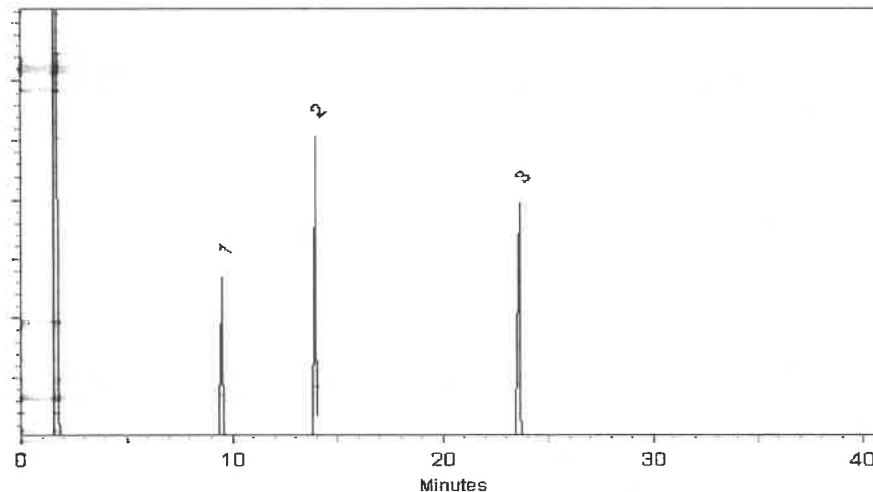
250°C

Det. Temp:

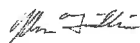
330°C

Det. Type:

FID




This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


John Friedline - Operations Technician I

Date Mixed: 09-Sep-2022

Balance: 1128353505


Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 13-Sep-2022

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 555872 **Lot No.:** A0193449
Description : Custom Pentachlorophenol Standard
Custom Pentachlorophenol Standard 25,000µg/mL, Methanol,
1mL/ampul
Container Size : 2 mL **Pkg Amt:** > 1 mL
Expiration Date : January 31, 2026 **Storage:** 10°C or colder
Ship: Ambient

Received on
01/13/23
by
CG
S11011
+0
S11015

CERTIFIED VALUES

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|-------------|-------------------|---------|----------|--------|-----------------------------|--|
| 1 | Pentachlorophenol | 87-86-5 | RP221012 | 99% | 25,050.0 µg/mL | +/- 778.6378 |

Solvent: Methanol
CAS # 67-56-1
Purity 99%

Russ Bookhamer

Russ Bookhamer - Operations Technician I

Date Mixed: 11-Jan-2023

Balance: B442140311

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 555870 Lot No.: A0194698
Description : Custom 2,4-Dinitrophenol Standard
Custom 2,4-Dinitrophenol Standard 25,000µg/mL, Methanol, 1mL/ampul
Container Size : 2 mL Pkg Amt: > 1 mL
Expiration Date : February 28, 2026 Storage: 10°C or colder
Ship: Ambient

CERTIFIED

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) |
|-------------|-------------------|---------|-------------|--------|-----------------------------|
| 1 | 2,4-Dinitrophenol | 51-28-5 | DR221221RSR | 99% | 25,195.0 µg/mL |

Solvent: Methanol
CAS # 67-56-1
Purity 99%

Russ Bookhamer - Operations Technician I

Date Mixed: 15-Feb-2023

Balance: B442140311

Manufactured under Restek®
Registered Quality
Certificate #FM 8

tified Reference Material Notes

es:

n date valid for unopened ampul stored in compliance with the recommended conditions.
nty, concentration, and expiration of the CRM are based on the unopened product being stored according to the
ended condition found in the storage field.

d/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD,
LC/MS, RI, and/or melting point.

nds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A
n factor is used to calculate the amount of compound necessary to achieve the desired concentration of the
mpound in solution.

isomeric compounds is reported as the sum of the isomers.

lues are rounded to the nearest whole number.

rtainty Value Notes:

rtainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded
ty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability
ty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

erage factor of 2, which gives a level of confidence of approximately 95%.

ged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure
imum packaged amount can be sufficiently transferred.

Notes:

tion is based upon gravimetric preparation using either a balance whose calibration has been verified daily
Γ traceable weights, and/or dilutions with Class A glassware.

:

the unopened product, when stored in compliance with the recommended conditions, is guaranteed through
ion displayed on the product label and certificate. Contact Restek for additional opened product stability
n, with the knowledge/understanding that open product stability is subject to the specific handling and
ntal conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with
tards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom
rm. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861,
ides complete instructions.

ssolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 555870 Lot No.: A0194698
Description : Custom 2,4-Dinitrophenol Standard
Custom 2,4-Dinitrophenol Standard 25,000µg/mL, Methanol, 1mL/ampul
Container Size : 2 mL Pkg Amt: > 1 mL
Expiration Date : February 28, 2026 Storage: 10°C or colder
Ship: Ambient

CERTIFIED

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) |
|-------------|-------------------|---------|-------------|--------|-----------------------------|
| 1 | 2,4-Dinitrophenol | 51-28-5 | DR221221RSR | 99% | 25,195.0 µg/mL |

Solvent: Methanol
CAS # 67-56-1
Purity 99%

Russ Bookhamer - Operations Technician I

Date Mixed: 15-Feb-2023

Balance: B442140311

Manufactured under Restek®
Registered Quality
Certificate #FM 8

tified Reference Material Notes

es:

n date valid for unopened ampul stored in compliance with the recommended conditions.
nty, concentration, and expiration of the CRM are based on the unopened product being stored according to the
ended condition found in the storage field.

d/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD,
LC/MS, RI, and/or melting point.

nds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A
n factor is used to calculate the amount of compound necessary to achieve the desired concentration of the
mpound in solution.

isomeric compounds is reported as the sum of the isomers.

lues are rounded to the nearest whole number.

rtainty Value Notes:

rtainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded
ty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability
ty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

erage factor of 2, which gives a level of confidence of approximately 95%.

ged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure
imum packaged amount can be sufficiently transferred.

Notes:

tion is based upon gravimetric preparation using either a balance whose calibration has been verified daily
Γ traceable weights, and/or dilutions with Class A glassware.

:

the unopened product, when stored in compliance with the recommended conditions, is guaranteed through
ion displayed on the product label and certificate. Contact Restek for additional opened product stability
n, with the knowledge/understanding that open product stability is subject to the specific handling and
ntal conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with
tards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom
rm. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861,
ides complete instructions.

ssolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 555869 **Lot No.:** A0194702

Description : Custom Hexachlorocyclopentadiene Standard

Custom Hexachlorocyclopentadiene Standard 25,000µg/mL, Methanol, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : February 28, 2026 **Storage:** 10°C or colder

Ship: Ambient

CERTIFIED

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) |
|-------------|---------------------------|---------|---------|--------|-----------------------------|
| 1 | Hexachlorocyclopentadiene | 77-47-4 | 0012019 | 99% | 25,008.0 µg/mL |

Solvent: Methanol
CAS # 67-56-1
Purity 99%

Dan F. Brown

Russ Bookhamer - Operations Technician I

Date Mixed: 15-Feb-2023

Balance: B442140311

Manufactured under Restek
Registered Quality
Certificate #FM1

ified Reference Material Notes

es:

n date valid for unopened ampul stored in compliance with the recommended conditions.
nty, concentration, and expiration of the CRM are based on the unopened product being stored according to the
ended condition found in the storage field.

d/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD,
LC/MS, RI, and/or melting point.
nds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A
n factor is used to calculate the amount of compound necessary to achieve the desired concentration of the
mpound in solution.
isomeric compounds is reported as the sum of the isomers.
ues are rounded to the nearest whole number.

rtainty Value Notes:

rtainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded
ty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability
ty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

verage factor of 2, which gives a level of confidence of approximately 95%.
ged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure
nimum packaged amount can be sufficiently transferred.

Notes:

tion is based upon gravimetric preparation using either a balance whose calibration has been verified daily
traceable weights, and/or dilutions with Class A glassware.

;
the unopened product, when stored in compliance with the recommended conditions, is guaranteed through
ion displayed on the product label and certificate. Contact Restek for additional opened product stability
i, with the knowledge/understanding that open product stability is subject to the specific handling and
ntal conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with
ards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom
m. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861,
des complete instructions.
solved material is visible inside the ampul, sonicate the unopened ampul until the material is completely



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 555223 **Lot No.:** A0197354

Description : Custom 8270 Plus Standard #1

Custom 8270 Plus Standard #1 1,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : April 30, 2025 **Storage:** 10°C or colder

Handling: This product is photosensitive. **Ship:** Ambient

Received on
04/24/23
by
CG
~~SP11277~~ S11277
to
S11306

CERTIFIED VALUES

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|-------------|------------------------|-----------|------------|--------|-----------------------------|--|
| 1 | 3,3'-Dichlorobenzidine | 91-94-1 | S230321RSR | 99% | 1,000.0 µg/mL | +/- 22.9569 |
| 2 | Atrazine | 1912-24-9 | 5FYWL | 99% | 1,001.0 µg/mL | +/- 22.9799 |
| 3 | Benzidine | 92-87-5 | S221205RSR | 99% | 1,000.0 µg/mL | +/- 22.9569 |
| 4 | epsilon-Caprolactam | 105-60-2 | I16X016 | 99% | 1,001.0 µg/mL | +/- 22.9799 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Matt Fragassi - Mix Technician

Date Mixed: 24-Apr-2023

Balance: 1122030677

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No.: 555223 **Lot No.:** A0197354
Description: Custom 8270 Plus Standard #1
Custom 8270 Plus Standard #1 1,000 µg/mL, Methylene Chloride, 1 mL/ampul
Container Size: 2 mL **Pkg Amt:** > 1 mL
Expiration Date: April 30, 2025 **Storage:** 10°C or colder
Handling: This product is photosensitive. **Ship:** Ambient

Received on
04/24/23
by
CG
~~SP11277~~ S11277
to
S11306

CERTIFIED VALUES

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|-------------|------------------------|-----------|------------|--------|-----------------------------|--|
| 1 | 3,3'-Dichlorobenzidine | 91-94-1 | S230321RSR | 99% | 1,000.0 µg/mL | +/- 22.9569 |
| 2 | Atrazine | 1912-24-9 | 5FYWL | 99% | 1,001.0 µg/mL | +/- 22.9799 |
| 3 | Benzidine | 92-87-5 | S221205RSR | 99% | 1,000.0 µg/mL | +/- 22.9569 |
| 4 | epsilon-Caprolactam | 105-60-2 | I16X016 | 99% | 1,001.0 µg/mL | +/- 22.9799 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Matt Fragassi - Mix Technician

Date Mixed: 24-Apr-2023

Balance: 1122030677

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No.: 555223 **Lot No.:** A0197354
Description: Custom 8270 Plus Standard #1
Custom 8270 Plus Standard #1 1,000 µg/mL, Methylene Chloride, 1 mL/ampul
Container Size: 2 mL **Pkg Amt:** > 1 mL
Expiration Date: April 30, 2025 **Storage:** 10°C or colder
Handling: This product is photosensitive. **Ship:** Ambient

Received on
04/24/23
by
CG
~~SP11277~~ S11277
to
S11306

CERTIFIED VALUES

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|-------------|------------------------|-----------|------------|--------|-----------------------------|--|
| 1 | 3,3'-Dichlorobenzidine | 91-94-1 | S230321RSR | 99% | 1,000.0 µg/mL | +/- 22.9569 |
| 2 | Atrazine | 1912-24-9 | 5FYWL | 99% | 1,001.0 µg/mL | +/- 22.9799 |
| 3 | Benzidine | 92-87-5 | S221205RSR | 99% | 1,000.0 µg/mL | +/- 22.9569 |
| 4 | epsilon-Caprolactam | 105-60-2 | I16X016 | 99% | 1,001.0 µg/mL | +/- 22.9799 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Matt Fragassi - Mix Technician

Date Mixed: 24-Apr-2023

Balance: 1122030677

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 555223 **Lot No.:** A0197354
Description : Custom 8270 Plus Standard #1
Custom 8270 Plus Standard #1 1,000µg/mL, Methylene Chloride, 1mL/ampul
Container Size : 2 mL **Pkg Amt:** > 1 mL
Expiration Date : April 30, 2025 **Storage:** 10°C or colder
Handling: This product is photosensitive. **Ship:** Ambient

Received on
04/24/23
by
CG
~~SP11277~~ S11277
to
S11306

CERTIFIED VALUES

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|-------------|------------------------|-----------|------------|--------|-----------------------------|--|
| 1 | 3,3'-Dichlorobenzidine | 91-94-1 | S230321RSR | 99% | 1,000.0 µg/mL | +/- 22.9569 |
| 2 | Atrazine | 1912-24-9 | 5FYWL | 99% | 1,001.0 µg/mL | +/- 22.9799 |
| 3 | Benzidine | 92-87-5 | S221205RSR | 99% | 1,000.0 µg/mL | +/- 22.9569 |
| 4 | epsilon-Caprolactam | 105-60-2 | I16X016 | 99% | 1,001.0 µg/mL | +/- 22.9799 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Matt Fragassi - Mix Technician

Date Mixed: 24-Apr-2023

Balance: 1122030677

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No.: 555223 **Lot No.:** A0197354
Description: Custom 8270 Plus Standard #1
Custom 8270 Plus Standard #1 1,000 µg/mL, Methylene Chloride, 1 mL/ampul
Container Size: 2 mL **Pkg Amt:** > 1 mL
Expiration Date: April 30, 2025 **Storage:** 10°C or colder
Handling: This product is photosensitive. **Ship:** Ambient

Received on
04/24/23
by
CG
~~SP11277~~ S11277
to
S11306

CERTIFIED VALUES

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|-------------|------------------------|-----------|------------|--------|-----------------------------|--|
| 1 | 3,3'-Dichlorobenzidine | 91-94-1 | S230321RSR | 99% | 1,000.0 µg/mL | +/- 22.9569 |
| 2 | Atrazine | 1912-24-9 | 5FYWL | 99% | 1,001.0 µg/mL | +/- 22.9799 |
| 3 | Benzidine | 92-87-5 | S221205RSR | 99% | 1,000.0 µg/mL | +/- 22.9569 |
| 4 | epsilon-Caprolactam | 105-60-2 | I16X016 | 99% | 1,001.0 µg/mL | +/- 22.9799 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Matt Fragassi - Mix Technician

Date Mixed: 24-Apr-2023

Balance: 1122030677

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 555223 **Lot No.:** A0197354

Description : Custom 8270 Plus Standard #1

Custom 8270 Plus Standard #1 1,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : April 30, 2025 **Storage:** 10°C or colder

Handling: This product is photosensitive. **Ship:** Ambient

Received on
04/24/23
by
CG
~~SP11277~~ S11277
to
S11306

CERTIFIED VALUES

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|-------------|------------------------|-----------|------------|--------|-----------------------------|--|
| 1 | 3,3'-Dichlorobenzidine | 91-94-1 | S230321RSR | 99% | 1,000.0 µg/mL | +/- 22.9569 |
| 2 | Atrazine | 1912-24-9 | 5FYWL | 99% | 1,001.0 µg/mL | +/- 22.9799 |
| 3 | Benzidine | 92-87-5 | S221205RSR | 99% | 1,000.0 µg/mL | +/- 22.9569 |
| 4 | epsilon-Caprolactam | 105-60-2 | I16X016 | 99% | 1,001.0 µg/mL | +/- 22.9799 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%


Matt Fragassi - Mix Technician

Date Mixed: 24-Apr-2023

Balance: 1122030677

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No.: 555223 **Lot No.:** A0197354
Description: Custom 8270 Plus Standard #1
Custom 8270 Plus Standard #1 1,000 µg/mL, Methylene Chloride, 1 mL/ampul
Container Size: 2 mL **Pkg Amt:** > 1 mL
Expiration Date: April 30, 2025 **Storage:** 10°C or colder
Handling: This product is photosensitive. **Ship:** Ambient

Received on
04/24/23
by
CG
~~SP11277~~ S11277
to
S11306

CERTIFIED VALUES

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|-------------|------------------------|-----------|------------|--------|-----------------------------|--|
| 1 | 3,3'-Dichlorobenzidine | 91-94-1 | S230321RSR | 99% | 1,000.0 µg/mL | +/- 22.9569 |
| 2 | Atrazine | 1912-24-9 | 5FYWL | 99% | 1,001.0 µg/mL | +/- 22.9799 |
| 3 | Benzidine | 92-87-5 | S221205RSR | 99% | 1,000.0 µg/mL | +/- 22.9569 |
| 4 | epsilon-Caprolactam | 105-60-2 | I16X016 | 99% | 1,001.0 µg/mL | +/- 22.9799 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Matt Fragassi - Mix Technician

Date Mixed: 24-Apr-2023

Balance: 1122030677

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 555223 **Lot No.:** A0197354
Description : Custom 8270 Plus Standard #1
Custom 8270 Plus Standard #1 1,000µg/mL, Methylene Chloride, 1mL/ampul
Container Size : 2 mL **Pkg Amt:** > 1 mL
Expiration Date : April 30, 2025 **Storage:** 10°C or colder
Handling: This product is photosensitive. **Ship:** Ambient

Received on
04/24/23
by
CG
~~SP11277~~ S11277
to
S11306

CERTIFIED VALUES

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|-------------|------------------------|-----------|------------|--------|-----------------------------|--|
| 1 | 3,3'-Dichlorobenzidine | 91-94-1 | S230321RSR | 99% | 1,000.0 µg/mL | +/- 22.9569 |
| 2 | Atrazine | 1912-24-9 | 5FYWL | 99% | 1,001.0 µg/mL | +/- 22.9799 |
| 3 | Benzidine | 92-87-5 | S221205RSR | 99% | 1,000.0 µg/mL | +/- 22.9569 |
| 4 | epsilon-Caprolactam | 105-60-2 | I16X016 | 99% | 1,001.0 µg/mL | +/- 22.9799 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Matt Fragassi - Mix Technician

Date Mixed: 24-Apr-2023

Balance: 1122030677

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



**PRODUCTOS
QUÍMICOS
MONTERREY, S.A. DE C.V.**

MIRADOR 201, COL. MIRADOR
MONTERREY, N.L. MEXICO
CP 64070
TEL +52 81 13 52 57 57
www.pqm.com.mx

CERTIFICATE OF ANALYSIS

| | | | |
|------------------------|-----------------------------------|---------------|---------------------------------|
| PRODUCT : | SODIUM SULFATE CRYSTALS ANHYDROUS | | |
| QUALITY : | ACS (CODE RMB3375) | FORMULA : | Na ₂ SO ₄ |
| SPECIFICATION NUMBER : | 6399 | RELEASE DATE: | ABR/21/2023 |
| LOT NUMBER : | 313201 | | |

| TEST | SPECIFICATIONS | LOT VALUES |
|--|----------------|-------------|
| Assay (Na ₂ SO ₄) | Min. 99.0% | 99.7 % |
| pH of a 5% solution at 25°C | 5.2 - 9.2 | 6.1 |
| Insoluble matter | Max. 0.01% | 0.005 % |
| Loss on ignition | Max. 0.5% | 0.1 % |
| Chloride (Cl) | Max. 0.001% | <0.001 % |
| Nitrogen compounds (as N) | Max. 5 ppm | <5 ppm |
| Phosphate (PO ₄) | Max. 0.001% | <0.001 % |
| Heavy metals (as Pb) | Max. 5 ppm | <5 ppm |
| Iron (Fe) | Max. 0.001% | <0.001 % |
| Calcium (Ca) | Max. 0.01% | 0.002 % |
| Magnesium (Mg) | Max. 0.005% | 0.001 % |
| Potassium (K) | Max. 0.008% | 0.003 % |
| Extraction-concentration suitability | Passes test | Passes test |
| Appearance | Passes test | Passes test |
| Identification | Passes test | Passes test |
| Solubility and foreign matter | Passes test | Passes test |
| Retained on US Standard No. 10 sieve | Max. 1% | 0.1 % |
| Retained on US Standard No. 60 sieve | Min. 94% | 97.3 % |
| Through US Standard No. 60 sieve | Max. 5% | 2.5 % |
| Through US Standard No. 100 sieve | Max. 10% | 0.1 % |

COMMENTS

QC: PhC Irma Belmares

If you need further details, please call our factory or contact our local distributor.

Recd. by R3 on 7/24/23 E 3551

RC-02-01, Ed. 3



Certificate of Analysis

Sodium Hydroxide (Pellets)

Material: 0583
Grade: ACS GRADE
Batch Number: 23B1556310

Chemical Formula: NaOH
Molecular Weight: 40
CAS #: 1310-73-2
Appearance:

Manufacture Date: 12/14/2022
Expiration Date: 12/31/2025

Storage: Room Temperature

Pellets

| TEST | SPECIFICATION | ANALYSIS | DISPOSITION |
|--------------------|------------------------|---------------------|-------------|
| Calcium | $\leq 0.005 \%$ | $< 0.005 \%$ | PASS |
| Chloride | $\leq 0.005 \%$ | 0.002 % | PASS |
| Heavy Metals | $\leq 0.002 \%$ | $< 0.002 \%$ | PASS |
| Iron | $\leq 0.001 \%$ | $< 0.001 \%$ | PASS |
| Magnesium | $\leq 0.002 \%$ | $< 0.002 \%$ | PASS |
| Mercury | $\leq 0.1 \text{ ppm}$ | $< 0.1 \text{ ppm}$ | PASS |
| Nickel | $\leq 0.001 \%$ | $< 0.001 \%$ | PASS |
| Nitrogen Compounds | $\leq 0.001 \%$ | $< 0.001 \%$ | PASS |
| Phosphate | $\leq 0.001 \%$ | $< 0.001 \%$ | PASS |
| Potassium | $\leq 0.02 \%$ | $< 0.02 \%$ | PASS |
| Purity | $\geq 97.0 \%$ | 99.2 % | PASS |
| Sodium Carbonate | $\leq 1.0 \%$ | 0.5 % | PASS |
| Sulfate | $\leq 0.003 \%$ | $< 0.003 \%$ | PASS |

Internal ID #: 710

Signature

We certify that this batch conforms to the specifications listed.

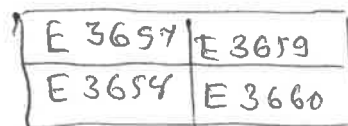
This document has been electronically produced and is valid without a signature.

Leona Edwardson, Quality Control Sr. Manager - Solon
VWR Chemicals, LLC.
28600 Fountain Parkway, Solon OH 44139 USA

Additional Information

Analysis may have been rounded to significant digits in specification limits.

Product meets analytical specifications of the grades listed.



Methylene Chloride
ULTRA RESI-ANALYZED
For Organic Residue Analysis
(dichloromethane)



Material No.: 9266-A4
Batch No.: 23K0962009
Manufactured Date: 2023-10-05
Expiration Date: 2025-01-03
Revision No.: 0

Certificate of Analysis

| Test | Specification | Result |
|--|------------------------|----------|
| FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL) | ≤ 5 | < 1 |
| ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL) | ≤ 10 | 3 |
| Assay (CH ₂ Cl ₂) (by GC, exclusive of preservative, corrected for water) | $\geq 99.8 \%$ | 100.0 % |
| Color (APHA) | ≤ 10 | 10 |
| Residue after Evaporation | $\leq 1.0 \text{ ppm}$ | 0.2 ppm |
| Titration Acid ($\mu\text{eq/g}$) | ≤ 0.3 | < 0.1 |
| Chloride (Cl) | $\leq 10 \text{ ppm}$ | < 5 ppm |
| Water (by KF, coulometric) | $\leq 0.02 \%$ | < 0.01 % |

For Laboratory, Research, or Manufacturing Use
MEETS SPECIFICATIONS WITHIN THE EXPIRATION PERIOD

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC
Manufacturer source batch: MG23J05873

E 3673

Ken Koehnlein
Sr. Manager, Quality Assurance

Acetone
BAKER RESI-ANALYZED® Reagent
For Organic Residue Analysis

 **avantorsm**



Material No.: 9254-03
Batch No.: 23H1462005
Manufactured Date: 2023-07-26
Expiration Date: 2026-07-25
Revision No.: 0

Certificate of Analysis

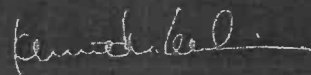
| Test | Specification | Result |
|---|---------------|-------------|
| Assay ((CH ₃) ₂ CO) (by GC, corrected for water) | ≥ 99.4 % | 99.7 % |
| Color (APHA) | ≤ 10 | 5 |
| Residue after Evaporation | ≤ 1.0 ppm | 0.3 ppm |
| Substances Reducing Permanganate | Passes Test | Passes Test |
| Titration Acid (μeq/g) | ≤ 0.3 | 0.1 |
| Titration Base (μeq/g) | ≤ 0.6 | < 0.1 |
| Water (H ₂ O) | ≤ 0.5 % | 0.3 % |
| FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL) | ≤ 5 | < 1 |
| ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL) | ≤ 10 | 1 |

For Laboratory, Research, or Manufacturing Use
MEETS SPECIFICATIONS WITHIN THE EXPIRATION PERIOD

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

Recd. by RP on 1/3/24

E 3674



Ken Koehnlein
Sr. Manager, Quality Assurance

For questions on this Certificate of Analysis please contact Technical Services at 855.282.6867 or +1.610.386.1700

Avantor Performance Materials, LLC

100 Matsonford Rd, Suite 200, Radnor, PA 19087, U.S.A. Phone 610.386.1700

Methylene Chloride
ULTRA RESI-ANALYZED
For Organic Residue Analysis
(dichloromethane)



Material No.: 9266-A4
Batch No.: 23K0962009
Manufactured Date: 2023-10-05
Expiration Date: 2025-01-03
Revision No.: 0

Certificate of Analysis

| Test | Specification | Result |
|--|----------------|----------|
| FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL) | ≤ 5 | < 1 |
| ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL) | ≤ 10 | 3 |
| Assay (CH ₂ Cl ₂) (by GC, exclusive of preservative, corrected for water) | $\geq 99.8 \%$ | 100.0 % |
| Color (APHA) | ≤ 10 | 10 |
| Residue after Evaporation | ≤ 1.0 ppm | 0.2 ppm |
| Titration Acid (μ eq/g) | ≤ 0.3 | < 0.1 |
| Chloride (Cl) | ≤ 10 ppm | < 5 ppm |
| Water (by KF, coulometric) | $\leq 0.02 \%$ | < 0.01 % |

For Laboratory, Research, or Manufacturing Use
MEETS SPECIFICATIONS WITHIN THE EXPIRATION PERIOD

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC
Manufacturer source batch: MG23J05873

E 3678

Ken Koehnlein
Sr. Manager, Quality Assurance

Acetone
BAKER RESI-ANALYZED® Reagent
For Organic Residue Analysis

avantor™



Material No.: 9254-03
Batch No.: 23H1462005
Manufactured Date: 2023-07-26
Expiration Date: 2026-07-25
Revision No.: 0

Certificate of Analysis

| Test | Specification | Result |
|---|---------------|-------------|
| Assay ((CH ₃) ₂ CO) (by GC, corrected for water) | ≥ 99.4 % | 99.7 % |
| Color (APHA) | ≤ 10 | 5 |
| Residue after Evaporation | ≤ 1.0 ppm | 0.3 ppm |
| Substances Reducing Permanganate | Passes Test | Passes Test |
| Titration Acid (μeq/g) | ≤ 0.3 | 0.1 |
| Titration Base (μeq/g) | ≤ 0.6 | < 0.1 |
| Water (H ₂ O) | ≤ 0.5 % | 0.3 % |
| FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL) | ≤ 5 | < 1 |
| ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL) | ≤ 10 | 1 |

For Laboratory, Research, or Manufacturing Use
MEETS SPECIFICATIONS WITHIN THE EXPIRATION PERIOD

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC

E3699

RS
2/14

Ken Koehnlein
Sr. Manager, Quality Assurance

Methylene Chloride
ULTRA RESI-ANALYZED
For Organic Residue Analysis
(dichloromethane)



Material No.: 9266-A4
Batch No.: 24A1562007
Manufactured Date: 2023-12-14
Expiration Date: 2025-03-14
Revision No.: 0

Certificate of Analysis

| Test | Specification | Result |
|--|------------------------|----------|
| FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL) | ≤ 5 | < 1 |
| ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL) | ≤ 10 | < 1 |
| Assay (CH_2Cl_2) (by GC, exclusive of preservative, corrected for water) | $\geq 99.8 \%$ | 100.0 % |
| Color (APHA) | ≤ 10 | 5 |
| Residue after Evaporation | $\leq 1.0 \text{ ppm}$ | 0.1 ppm |
| Titration Acid ($\mu\text{eq/g}$) | ≤ 0.3 | < 0.1 |
| Chloride (Cl) | $\leq 10 \text{ ppm}$ | < 5 ppm |
| Water (by KF, coulometric) | $\leq 0.02 \%$ | < 0.01 % |

For Laboratory, Research, or Manufacturing Use
MEETS SPECIFICATIONS WITHIN THE EXPIRATION PERIOD

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC
Manufacturer source batch: MG23L14152

E 3706

REC.
AS 2/19/24

Ken Koehnlein
Sr. Manager, Quality Assurance

Methylene Chloride
ULTRA RESI-ANALYZED
For Organic Residue Analysis
(dichloromethane)



Material No.: 9266-A4
Batch No.: 24A1562007
Manufactured Date: 2023-12-14
Expiration Date: 2025-03-14
Revision No.: 0

Certificate of Analysis

| Test | Specification | Result |
|--|------------------------|----------|
| FID-Sensitive Impurities (as 2-Octanol) Single Impurity Peak (ng/mL) | ≤ 5 | < 1 |
| ECD Sensitive Impurities (as Heptachlor Epoxide) Single Peak (pg/mL) | ≤ 10 | < 1 |
| Assay (CH_2Cl_2) (by GC, exclusive of preservative, corrected for water) | $\geq 99.8 \%$ | 100.0 % |
| Color (APHA) | ≤ 10 | 5 |
| Residue after Evaporation | $\leq 1.0 \text{ ppm}$ | 0.1 ppm |
| Titration Acid ($\mu\text{eq/g}$) | ≤ 0.3 | < 0.1 |
| Chloride (Cl) | $\leq 10 \text{ ppm}$ | < 5 ppm |
| Water (by KF, coulometric) | $\leq 0.02 \%$ | < 0.01 % |

For Laboratory, Research, or Manufacturing Use
MEETS SPECIFICATIONS WITHIN THE EXPIRATION PERIOD

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC
Manufacturer source batch: MG23L14152

E 3707

Ken Koehnlein
Sr. Manager, Quality Assurance

Sulfuric Acid
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis
Low Selenium

 **avantor**™



Material No.: 9673-33
Batch No.: 23D2462010
Manufactured Date: 2023-03-22
Retest Date: 2028-03-20
Revision No.: 0

Certificate of Analysis

| Test | Specification | Result |
|--|---------------|-------------|
| ACS – Assay (H ₂ SO ₄) | 95.0 – 98.0 % | 96.1 % |
| Appearance | Passes Test | Passes Test |
| ACS – Color (APHA) | ≤ 10 | 5 |
| ACS – Residue after Ignition | ≤ 3 ppm | < 1 ppm |
| ACS – Substances Reducing Permanganate (as SO ₂) | ≤ 2 ppm | < 2 ppm |
| Ammonium (NH ₄) | ≤ 1 ppm | 1 ppm |
| Chloride (Cl) | ≤ 0.1 ppm | < 0.1 ppm |
| Nitrate (NO ₃) | ≤ 0.2 ppm | < 0.1 ppm |
| Phosphate (PO ₄) | ≤ 0.5 ppm | < 0.1 ppm |
| Trace Impurities – Aluminum (Al) | ≤ 30.0 ppb | < 5.0 ppb |
| Arsenic and Antimony (as As) | ≤ 4.0 ppb | < 2.0 ppb |
| Trace Impurities – Boron (B) | ≤ 10.0 ppb | 8.5 ppb |
| Trace Impurities – Cadmium (Cd) | ≤ 2.0 ppb | < 0.3 ppb |
| Trace Impurities – Chromium (Cr) | ≤ 6.0 ppb | < 0.4 ppb |
| Trace Impurities – Cobalt (Co) | ≤ 0.5 ppb | < 0.3 ppb |
| Trace Impurities – Copper (Cu) | ≤ 1.0 ppb | < 0.1 ppb |
| Trace Impurities – Gold (Au) | ≤ 10.0 ppb | 0.5 ppb |
| Heavy Metals (as Pb) | ≤ 500.0 ppb | < 100.0 ppb |
| Trace Impurities – Iron (Fe) | ≤ 50.0 ppb | 1.3 ppb |
| Trace Impurities – Lead (Pb) | ≤ 0.5 ppb | < 0.5 ppb |
| Trace Impurities – Magnesium (Mg) | ≤ 7.0 ppb | 0.8 ppb |
| Trace Impurities – Manganese (Mn) | ≤ 1.0 ppb | < 0.4 ppb |
| Trace Impurities – Mercury (Hg) | ≤ 0.5 ppb | < 0.1 ppb |
| Trace Impurities – Nickel (Ni) | ≤ 2.0 ppb | 0.3 ppb |
| Trace Impurities – Potassium (K) | ≤ 500.0 ppb | < 2.0 ppb |
| Trace Impurities – Selenium (Se) | ≤ 50.0 ppb | < 0.1 ppb |
| Trace Impurities – Silicon (Si) | ≤ 100.0 ppb | 31.5 ppb |
| Trace Impurities – Silver (Ag) | ≤ 1.0 ppb | < 0.3 ppb |

>>> Continued on page 2 >>>

Sulfuric Acid
BAKER INSTRA-ANALYZED® Reagent
For Trace Metal Analysis
Low Selenium



Material No.: 9673-33
Batch No.: 23D2462010

| Test | Specification | Result |
|-----------------------------------|------------------|-----------|
| Trace Impurities – Sodium (Na) | ≤ 500.0 ppb | 5.4 ppb |
| Trace Impurities – Strontium (Sr) | ≤ 5.0 ppb | < 0.2 ppb |
| Trace Impurities – Tin (Sn) | ≤ 5.0 ppb | < 0.8 ppb |
| Trace Impurities – Zinc (Zn) | ≤ 5.0 ppb | 0.4 ppb |

For Laboratory, Research, or Manufacturing Use

Country of Origin: USA
Packaging Site: Phillipsburg Mfg Ctr & DC


Jamie Ethier
Vice President Global Quality



5580 Skyline Blvd
Santa Rosa, CA 95403
(707)525-5788
(800)878-7654 Toll Free
(707)545-7901 Fax

Manufacturer's Quality System
Audited & Registered
by TUV USA to ISO 9001:2015

511440
Date Received: 07/17/23
511412

Certificate of Analysis

Rev 0 Page 1 of 1

Catalog No.: Lot No.: Storage: Solvent: Exp. Date: Description:
Z-110094-02 503442 ≤ -10 °C Methylene Chloride 8/26/2024 CLP Base/Neutral Surrogate Solution, 5,000 mg/L, 1 ml

| Compound | CAS No. | Purity (%) | Compound Lot No. | Concentration, mg/L |
|------------------------------------|-----------|------------|------------------|---------------------|
| 1,2-dichlorobenzene-d ₄ | 2199-69-1 | 99.7 | 247.29 3P | 5052 ± 122.61 |
| 2-fluorobiphenyl | 321-60-8 | 99.7 | 8.7.1.1P | 5005 ± 121.47 |
| nitrobenzene-d ₄ | 4165-60-0 | 100 | 7.9.2P | 5040 ± 122.21 |
| p-terphenyl-d ₁₄ | 1718-51-0 | 99.6 | 9.12.9P | 5027 ± 122 |

*Not a certified value

Certified By: Joanna Radu
Joanna Radu
Chemist

All weights are traceable through N. I. S. T. Test No. 822/264157-00.
Concentration (correct for purity) and uncertainty (95% confidence) values listed are determined gravimetrically.



CERTIFIED REFERENCE MATERIAL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309
www.restek.com

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31206

Lot No.: A0196843

Description : SV Internal Standard Mix 2mg/ml

SV Internal Standard Mix 2mg/ml 2000 µg/ml, Methylene Chloride, 1mL/ampul

Container Size : 2 mL

Pkg Amt: > 1 mL

Expiration Date : March 31, 2029

Storage: 10°C or colder

Handling: Sonication required. Mix is photosensitive.

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------|------------|----------|--------|-----------------------------|--|
| 1 | 1,4-Dichlorobenzene-d4 | 3855-82-1 | PR-30447 | 99% | 2,010.0 µg/mL | +/- 90.5322 |
| 2 | Naphthalene-d8 | 1146-65-2 | M-2180 | 99% | 2,010.0 µg/mL | +/- 90.5316 |
| 3 | Acenaphthene-d10 | 15067-26-2 | PR-31822 | 99% | 2,010.0 µg/mL | +/- 90.5334 |
| 4 | Phenanthrene-d10 | 1517-22-2 | PR-32303 | 99% | 2,010.3 µg/mL | +/- 90.5466 |
| 5 | Chrysene-d12 | 1719-03-5 | PR-32210 | 99% | 2,010.4 µg/mL | +/- 90.5490 |
| 6 | Perylene-d12 | 1520-96-3 | PR-33205 | 99% | 2,010.2 µg/mL | +/- 90.5421 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

511449
511528
7.8.
0812812

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

Inj. Temp:

250°C

Det. Temp:

330°C

Det. Type:

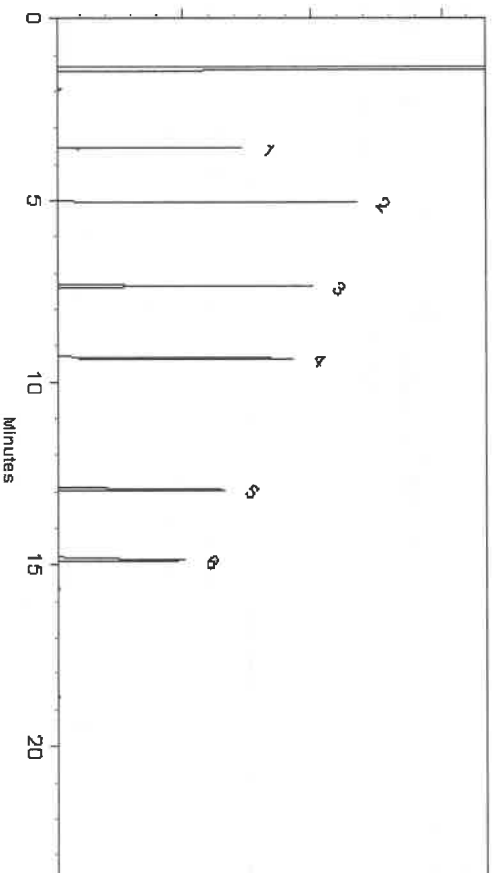
FID

Split Vent:

10 ml/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

[Signature]
Jess Hoy - Operations Tech I

Date Mixed:

10-Apr-2023

Balance Serial #

1128353505

[Signature]
Jennifer Polino - Operations Tech III - ARM QC

Date Passed:

14-Apr-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.

- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 555223
Description : Custom 8270 Plus Standard #1
Custom 8270 Plus Standard #1 1,000µg/mL, Methylene Chloride, 1mL/ampul
Container Size : 2 mL
Expiration Date : September 30, 2025
Handling : This product is photosensitive.

Lot No.: A0201940
Pkg Amt: > 1 mL
Storage: 10°C or colder
Ship: Ambient

511539
↓
51568
} 7.P.
09/19/

CERTIFIED VALUES

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|-------------|------------------------|-----------|------------|--------|-----------------------------|--|
| 1 | 3,3'-Dichlorobenzidine | 91-94-1 | S230321RSR | 99% | 1,001.0 µg/mL | +/- 22.9799 |
| 2 | Atrazine | 1912-24-9 | 5FYWL | 99% | 1,010.0 µg/mL | +/- 23.1865 |
| 3 | Benzidine | 92-87-5 | S221205RSR | 99% | 1,008.0 µg/mL | +/- 23.1406 |
| 4 | epsilon-Caprolactam | 105-60-2 | I16X016 | 99% | 1,008.0 µg/mL | +/- 23.1406 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

REVIEWED

By Jennifer Pollino at 7:10 am, Sep 13, 2023

Sam Moodler - Operations Tech I

Date Mixed: 13-Sep-2023

Balance: B345965662

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 555224 **Lot No.:** A0201998

Description : Custom 8270 Plus Standard #2
Custom 8270 Plus Standard #2 1,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : September 30, 2025 **Storage:** 10°C or colder

Ship: Ambient

S11569

S11598

KS

09/19/2

CERTIFIED VALUES

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|-------------|----------------------------|----------|--------------|--------|-----------------------------|--|
| 1 | 1,2,4,5-Tetrachlorobenzene | 95-94-3 | MKCS1444 | 99% | 1,003.5 µg/mL | +/- 29.497807 |
| 2 | Acetophenone | 98-86-2 | STBH8205 | 99% | 1,004.0 µg/mL | +/- 29.512504 |
| 3 | Benzaldehyde | 100-52-7 | RD230209RSRA | 99% | 1,003.4 µg/mL | +/- 29.494867 |
| 4 | Benzoic acid | 65-85-0 | MKCR2694 | 99% | 1,002.2 µg/mL | +/- 29.459594 |
| 5 | Biphenyl | 92-52-4 | MKCL6515 | 99% | 1,002.1 µg/mL | +/- 29.456654 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Penelope Riglin - Operations Tech I

Date Mixed: 14-Sep-2023

Balance: 1128360905

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 555224 **Lot No.:** A0201998

Description : Custom 8270 Plus Standard #2
Custom 8270 Plus Standard #2 1,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : September 30, 2025 **Storage:** 10°C or colder

Ship: Ambient

S11569

S11598

KS

09/19/2

CERTIFIED VALUES

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|-------------|----------------------------|----------|--------------|--------|-----------------------------|--|
| 1 | 1,2,4,5-Tetrachlorobenzene | 95-94-3 | MKCS1444 | 99% | 1,003.5 µg/mL | +/- 29.497807 |
| 2 | Acetophenone | 98-86-2 | STBH8205 | 99% | 1,004.0 µg/mL | +/- 29.512504 |
| 3 | Benzaldehyde | 100-52-7 | RD230209RSRA | 99% | 1,003.4 µg/mL | +/- 29.494867 |
| 4 | Benzoic acid | 65-85-0 | MKCR2694 | 99% | 1,002.2 µg/mL | +/- 29.459594 |
| 5 | Biphenyl | 92-52-4 | MKCL6515 | 99% | 1,002.1 µg/mL | +/- 29.456654 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Penelope Riglin - Operations Tech I

Date Mixed: 14-Sep-2023

Balance: 1128360905

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 555224 **Lot No.:** A0201998

Description : Custom 8270 Plus Standard #2
Custom 8270 Plus Standard #2 1,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : September 30, 2025 **Storage:** 10°C or colder

Ship: Ambient

S11569

|

KS

09/19/2

S11598

CERTIFIED VALUES

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|-------------|----------------------------|----------|--------------|--------|-----------------------------|--|
| 1 | 1,2,4,5-Tetrachlorobenzene | 95-94-3 | MKCS1444 | 99% | 1,003.5 µg/mL | +/- 29.497807 |
| 2 | Acetophenone | 98-86-2 | STBH8205 | 99% | 1,004.0 µg/mL | +/- 29.512504 |
| 3 | Benzaldehyde | 100-52-7 | RD230209RSRA | 99% | 1,003.4 µg/mL | +/- 29.494867 |
| 4 | Benzoic acid | 65-85-0 | MKCR2694 | 99% | 1,002.2 µg/mL | +/- 29.459594 |
| 5 | Biphenyl | 92-52-4 | MKCL6515 | 99% | 1,002.1 µg/mL | +/- 29.456654 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Penelope Riglin - Operations Tech I

Date Mixed: 14-Sep-2023

Balance: 1128360905

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 555224 **Lot No.:** A0201998

Description : Custom 8270 Plus Standard #2
Custom 8270 Plus Standard #2 1,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : September 30, 2025 **Storage:** 10°C or colder

Ship: Ambient

S11569

S11598

KS

09/19/2

CERTIFIED VALUES

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|-------------|----------------------------|----------|--------------|--------|-----------------------------|--|
| 1 | 1,2,4,5-Tetrachlorobenzene | 95-94-3 | MKCS1444 | 99% | 1,003.5 µg/mL | +/- 29.497807 |
| 2 | Acetophenone | 98-86-2 | STBH8205 | 99% | 1,004.0 µg/mL | +/- 29.512504 |
| 3 | Benzaldehyde | 100-52-7 | RD230209RSRA | 99% | 1,003.4 µg/mL | +/- 29.494867 |
| 4 | Benzoic acid | 65-85-0 | MKCR2694 | 99% | 1,002.2 µg/mL | +/- 29.459594 |
| 5 | Biphenyl | 92-52-4 | MKCL6515 | 99% | 1,002.1 µg/mL | +/- 29.456654 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Penelope Riglin - Operations Tech I

Date Mixed: 14-Sep-2023

Balance: 1128360905

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 555224 **Lot No.:** A0201998

Description : Custom 8270 Plus Standard #2
Custom 8270 Plus Standard #2 1,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : September 30, 2025 **Storage:** 10°C or colder

Ship: Ambient

S11569

S11598

KS

09/19/2

CERTIFIED VALUES

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|-------------|----------------------------|----------|--------------|--------|-----------------------------|--|
| 1 | 1,2,4,5-Tetrachlorobenzene | 95-94-3 | MKCS1444 | 99% | 1,003.5 µg/mL | +/- 29.497807 |
| 2 | Acetophenone | 98-86-2 | STBH8205 | 99% | 1,004.0 µg/mL | +/- 29.512504 |
| 3 | Benzaldehyde | 100-52-7 | RD230209RSRA | 99% | 1,003.4 µg/mL | +/- 29.494867 |
| 4 | Benzoic acid | 65-85-0 | MKCR2694 | 99% | 1,002.2 µg/mL | +/- 29.459594 |
| 5 | Biphenyl | 92-52-4 | MKCL6515 | 99% | 1,002.1 µg/mL | +/- 29.456654 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Penelope Riglin - Operations Tech I

Date Mixed: 14-Sep-2023

Balance: 1128360905

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 555224 Lot No.: A0201998

Description : Custom 8270 Plus Standard #2
Custom 8270 Plus Standard #2 1,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL Pkg Amt: > 1 mL

Expiration Date : September 30, 2025 Storage: 10°C or colder

Ship: Ambient

S11569

S11598

KS

09/19/2

CERTIFIED VALUES

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|-------------|----------------------------|----------|--------------|--------|-----------------------------|--|
| 1 | 1,2,4,5-Tetrachlorobenzene | 95-94-3 | MKCS1444 | 99% | 1,003.5 µg/mL | +/- 29.497807 |
| 2 | Acetophenone | 98-86-2 | STBH8205 | 99% | 1,004.0 µg/mL | +/- 29.512504 |
| 3 | Benzaldehyde | 100-52-7 | RD230209RSRA | 99% | 1,003.4 µg/mL | +/- 29.494867 |
| 4 | Benzoic acid | 65-85-0 | MKCR2694 | 99% | 1,002.2 µg/mL | +/- 29.459594 |
| 5 | Biphenyl | 92-52-4 | MKCL6515 | 99% | 1,002.1 µg/mL | +/- 29.456654 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Penelope Riglin - Operations Tech I

Date Mixed: 14-Sep-2023

Balance: 1128360905

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 555224 Lot No.: A0201998

Description : Custom 8270 Plus Standard #2
Custom 8270 Plus Standard #2 1,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL Pkg Amt: > 1 mL

Expiration Date : September 30, 2025 Storage: 10°C or colder

Ship: Ambient

S11569

S11598

KS

09/19/2

CERTIFIED VALUES

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|-------------|----------------------------|----------|--------------|--------|-----------------------------|--|
| 1 | 1,2,4,5-Tetrachlorobenzene | 95-94-3 | MKCS1444 | 99% | 1,003.5 µg/mL | +/- 29.497807 |
| 2 | Acetophenone | 98-86-2 | STBH8205 | 99% | 1,004.0 µg/mL | +/- 29.512504 |
| 3 | Benzaldehyde | 100-52-7 | RD230209RSRA | 99% | 1,003.4 µg/mL | +/- 29.494867 |
| 4 | Benzoic acid | 65-85-0 | MKCR2694 | 99% | 1,002.2 µg/mL | +/- 29.459594 |
| 5 | Biphenyl | 92-52-4 | MKCL6515 | 99% | 1,002.1 µg/mL | +/- 29.456654 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Penelope Riglin - Operations Tech I

Date Mixed: 14-Sep-2023

Balance: 1128360905

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

gravimetric



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 555224 **Lot No.:** A0201998

Description : Custom 8270 Plus Standard #2
Custom 8270 Plus Standard #2 1,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : September 30, 2025 **Storage:** 10°C or colder

Ship: Ambient

S11569

S11598

KS

09/19/2

CERTIFIED VALUES

| Component # | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|-------------|----------------------------|----------|--------------|--------|-----------------------------|--|
| 1 | 1,2,4,5-Tetrachlorobenzene | 95-94-3 | MKCS1444 | 99% | 1,003.5 µg/mL | +/- 29.497807 |
| 2 | Acetophenone | 98-86-2 | STBH8205 | 99% | 1,004.0 µg/mL | +/- 29.512504 |
| 3 | Benzaldehyde | 100-52-7 | RD230209RSRA | 99% | 1,003.4 µg/mL | +/- 29.494867 |
| 4 | Benzoic acid | 65-85-0 | MKCR2694 | 99% | 1,002.2 µg/mL | +/- 29.459594 |
| 5 | Biphenyl | 92-52-4 | MKCL6515 | 99% | 1,002.1 µg/mL | +/- 29.456654 |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Penelope Riglin - Operations Tech I

Date Mixed: 14-Sep-2023

Balance: 1128360905

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31853 **Lot No.:** A0196453
Description : 1,4-dioxane
1,4-Dioxane 2,000µg/mL, Methylene Chloride, 1mL/ampul
Container Size : 2 mL **Pkg Amt:** > 1 mL
Expiration Date : March 31, 2028 **Storage:** 0°C or colder
Ship: Ambient

S11749
↓
S11794 } RC / 11/30/23

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|-------------|----------|----------|--------|-----------------------------|--|
| 1 | 1,4-Dioxane | 123-91-1 | SHBN3770 | 99% | 2,013.0 µg/mL | +/- 25.0521 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant flow 1.8 mL/min.

Temp. Program:

80°C (hold 0.1 min.) to 330°C
@ 9.6°C/min. (hold 2.86 min.)

Inj. Temp:

250°C

Det. Temp:

340°C

Det. Type:

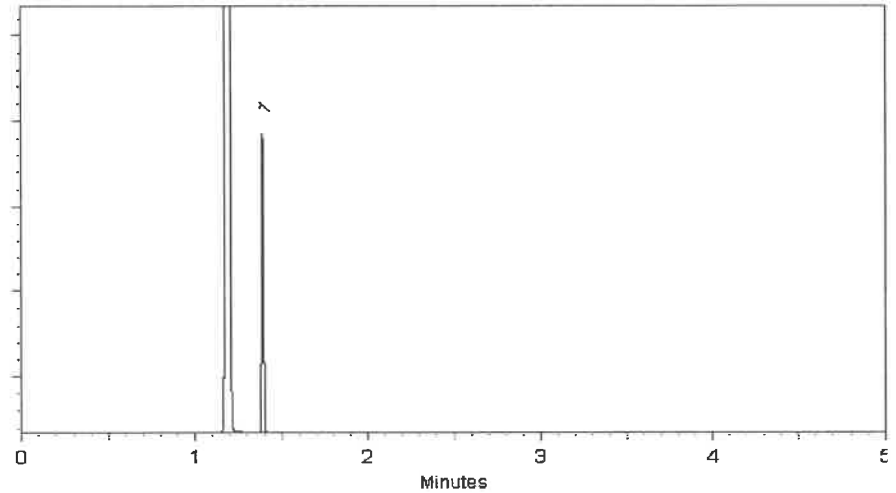
FID

Split Vent:

100 mL/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Sam Moodler
Sam Moodler - Operations Tech I

Date Mixed: 30-Mar-2023

Balance Serial # B707717271

Jennifer Pollino
Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 31-Mar-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31853 **Lot No.:** A0196453
Description : 1,4-dioxane
1,4-Dioxane 2,000µg/mL, Methylene Chloride, 1mL/ampul
Container Size : 2 mL **Pkg Amt:** > 1 mL
Expiration Date : March 31, 2028 **Storage:** 0°C or colder
Ship: Ambient

S11749
↓
S11794 } RC / 11/30/23

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|-------------|----------|----------|--------|-----------------------------|--|
| 1 | 1,4-Dioxane | 123-91-1 | SHBN3770 | 99% | 2,013.0 µg/mL | +/- 25.0521 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant flow 1.8 mL/min.

Temp. Program:

80°C (hold 0.1 min.) to 330°C
@ 9.6°C/min. (hold 2.86 min.)

Inj. Temp:

250°C

Det. Temp:

340°C

Det. Type:

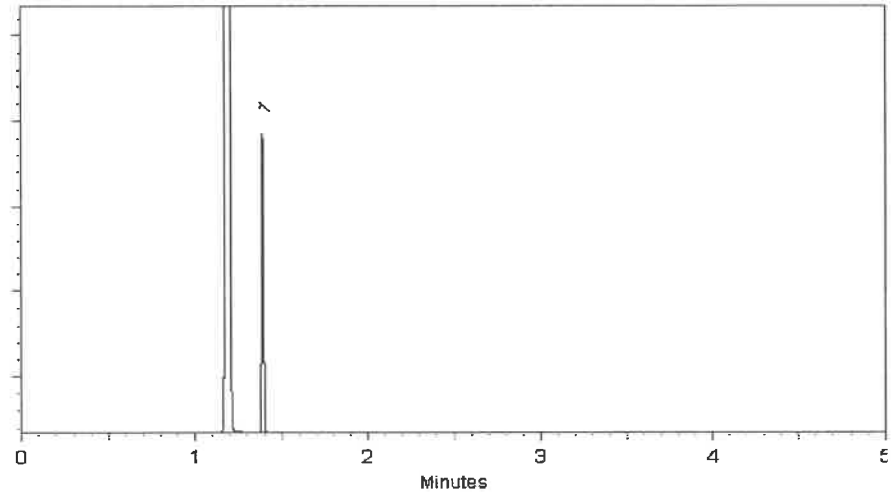
FID

Split Vent:

100 mL/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Sam Moodler
Sam Moodler - Operations Tech I

Date Mixed: 30-Mar-2023

Balance Serial # B707717271

Jennifer Pollino
Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 31-Mar-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31853 **Lot No.:** A0196453
Description : 1,4-dioxane
1,4-Dioxane 2,000µg/mL, Methylene Chloride, 1mL/ampul
Container Size : 2 mL **Pkg Amt:** > 1 mL
Expiration Date : March 31, 2028 **Storage:** 0°C or colder
Ship: Ambient

S11749
↓
S11794 } RC / 11/30/23

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|-------------|----------|----------|--------|-----------------------------|--|
| 1 | 1,4-Dioxane | 123-91-1 | SHBN3770 | 99% | 2,013.0 µg/mL | +/- 25.0521 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant flow 1.8 mL/min.

Temp. Program:

80°C (hold 0.1 min.) to 330°C
@ 9.6°C/min. (hold 2.86 min.)

Inj. Temp:

250°C

Det. Temp:

340°C

Det. Type:

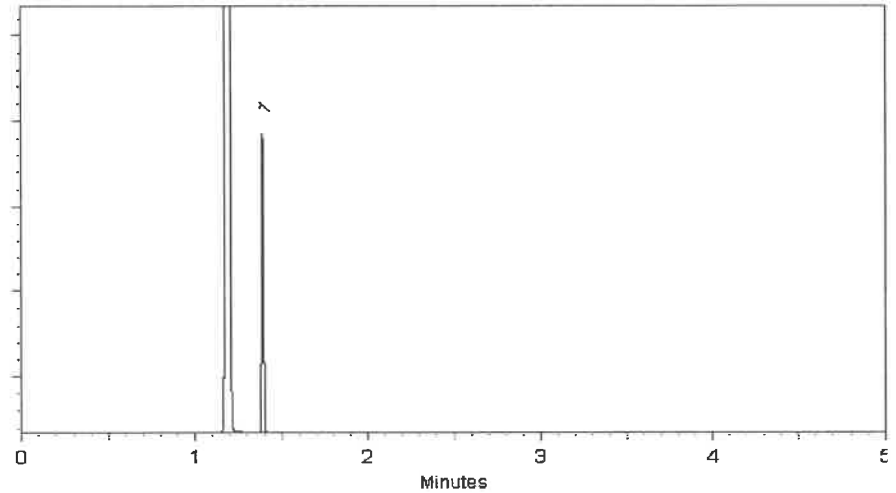
FID

Split Vent:

100 mL/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Sam Moodler
Sam Moodler - Operations Tech I

Date Mixed: 30-Mar-2023

Balance Serial # B707717271

Jennifer Pollino
Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 31-Mar-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31853 **Lot No.:** A0196453
Description : 1,4-dioxane
1,4-Dioxane 2,000µg/mL, Methylene Chloride, 1mL/ampul
Container Size : 2 mL **Pkg Amt:** > 1 mL
Expiration Date : March 31, 2028 **Storage:** 0°C or colder
Ship: Ambient

S11749
↓
S11794 } RC / 11/30/23

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|-------------|----------|----------|--------|-----------------------------|--|
| 1 | 1,4-Dioxane | 123-91-1 | SHBN3770 | 99% | 2,013.0 µg/mL | +/- 25.0521 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant flow 1.8 mL/min.

Temp. Program:

80°C (hold 0.1 min.) to 330°C
@ 9.6°C/min. (hold 2.86 min.)

Inj. Temp:

250°C

Det. Temp:

340°C

Det. Type:

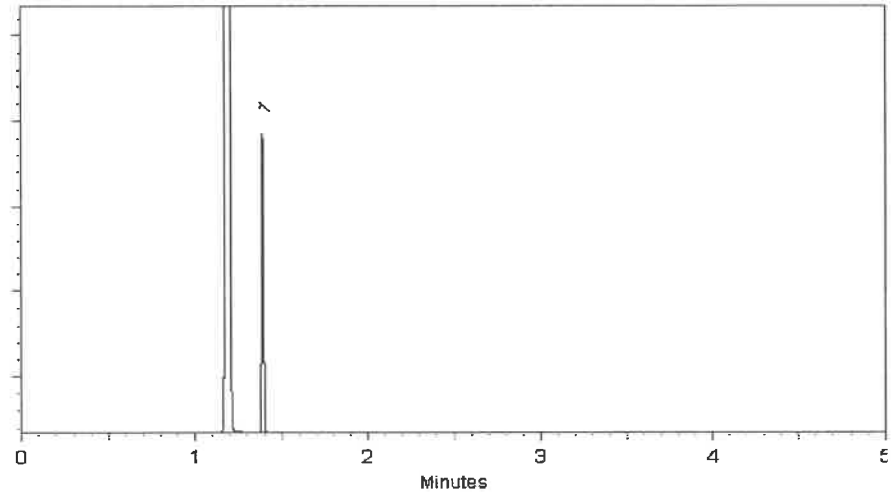
FID

Split Vent:

100 mL/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Sam Moodler
Sam Moodler - Operations Tech I

Date Mixed: 30-Mar-2023

Balance Serial # B707717271

Jennifer Pollino
Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 31-Mar-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31853 **Lot No.:** A0196453
Description : 1,4-dioxane
1,4-Dioxane 2,000µg/mL, Methylene Chloride, 1mL/ampul
Container Size : 2 mL **Pkg Amt:** > 1 mL
Expiration Date : March 31, 2028 **Storage:** 0°C or colder
Ship: Ambient

S11749
↓
S11794 } RC / 11/30/23

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|-------------|----------|----------|--------|-----------------------------|--|
| 1 | 1,4-Dioxane | 123-91-1 | SHBN3770 | 99% | 2,013.0 µg/mL | +/- 25.0521 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant flow 1.8 mL/min.

Temp. Program:

80°C (hold 0.1 min.) to 330°C
@ 9.6°C/min. (hold 2.86 min.)

Inj. Temp:

250°C

Det. Temp:

340°C

Det. Type:

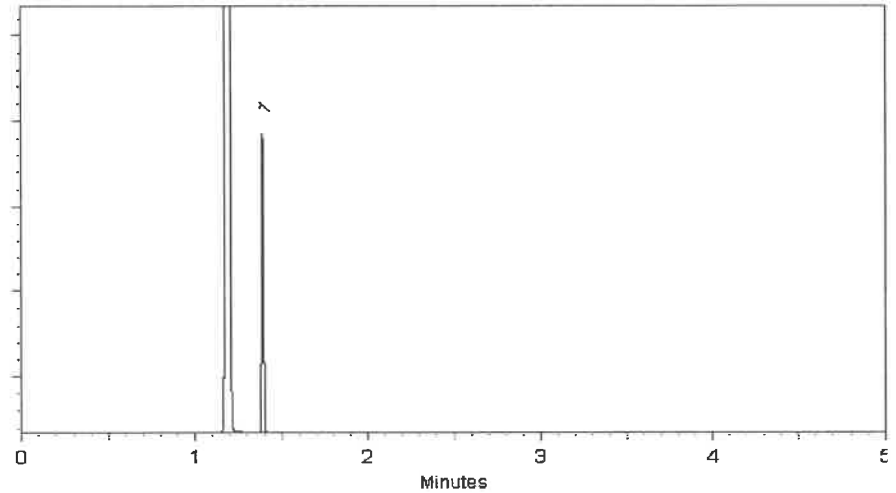
FID

Split Vent:

100 ml/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Sam Moodler
Sam Moodler - Operations Tech I

Date Mixed: 30-Mar-2023 Balance Serial # B707717271

Jennifer Pollino
Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 31-Mar-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397

General Certified Reference Material Notes

Expiration Notes:

- Expiration date valid for unopened ampul stored in compliance with the recommended conditions.
- Uncertainty, concentration, and expiration of the CRM are based on the unopened product being stored according to the recommended condition found in the storage field.

Purity Notes:

- Purity and/or chemical identity are determined by one or more of the following techniques: GC/FID, HPLC, GC/μECD, GC/MS, LC/MS, RI, and/or melting point.
- Compounds with a listed purity of less than 99% have been weight corrected to compensate for impurities and/or salts. A correction factor is used to calculate the amount of compound necessary to achieve the desired concentration of the parent compound in solution.
- Purity of isomeric compounds is reported as the sum of the isomers.
- Purity values are rounded to the nearest whole number.

Certified Uncertainty Value Notes:

- The uncertainties are determined in accordance with ISO 17034 and Guide 35. The certified expanded uncertainty value includes gravimetric uncertainty, homogeneity between-ampul uncertainty, storage stability uncertainty and shipping stability uncertainty and were combined using the following formula:

$$U_{combined\ uncertainty} = k \sqrt{u_{gravimetric}^2 + u_{homogeneity}^2 + u_{storage\ stability}^2 + u_{shipping\ stability}^2}$$

k is a coverage factor of 2, which gives a level of confidence of approximately 95%.

- The packaged amount is the minimum sample size for which uncertainty is valid. The ampuls are over-filled to ensure that the minimum packaged amount can be sufficiently transferred.

Manufacturing Notes:

- Concentration is based upon gravimetric preparation using either a balance whose calibration has been verified daily using NIST traceable weights, and/or dilutions with Class A glassware.

Handling Notes:

- Stability of the unopened product, when stored in compliance with the recommended conditions, is guaranteed through the expiration displayed on the product label and certificate. Contact Restek for additional opened product stability information, with the knowledge/understanding that open product stability is subject to the specific handling and environmental conditions to which the product is exposed. For your convenience Restek supplies deactivated vials with most standards packed in 2mL ampuls. Larger volume deactivated vials are available through Restek as a custom ordered item. Additionally, Restek sells DMDCS for the purpose of glassware deactivation as catalog number 31861, which includes complete instructions.
- If any undissolved material is visible inside the ampul, sonicate the unopened ampul until the material is completely dissolved.



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31850 **Lot No.:** A0197982
Description : 8270 MegaMix®
8270 MegaMix® 500-1,000µg/mL, Methylene Chloride, 1mL/ampul
Container Size : 2 mL **Pkg Amt:** > 1 mL
Expiration Date : November 30, 2024 **Storage:** 0°C or colder
Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

511877
↓
511906
RC/
11/30/23

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------------|----------|-----------|--------|-----------------------------|--|
| 1 | Pyridine | 110-86-1 | SHBN7324 | 99% | 1,006.9 µg/mL | +/- 36.6352 |
| 2 | N-Nitrosodimethylamine | 62-75-9 | 230209JLM | 99% | 1,007.4 µg/mL | +/- 36.6514 |
| 3 | Phenol | 108-95-2 | MKCK1120 | 99% | 1,005.3 µg/mL | +/- 36.5746 |
| 4 | Aniline | 62-53-3 | X22F726 | 99% | 1,004.6 µg/mL | +/- 36.5503 |
| 5 | Bis(2-chloroethyl)ether | 111-44-4 | SHBL6942 | 99% | 1,005.1 µg/mL | +/- 36.5665 |
| 6 | 2-Chlorophenol | 95-57-8 | STBJ3909 | 99% | 1,007.1 µg/mL | +/- 36.6392 |
| 7 | 1,3-Dichlorobenzene | 541-73-1 | BCBZ7498 | 99% | 1,006.7 µg/mL | +/- 36.6251 |
| 8 | 1,4-Dichlorobenzene | 106-46-7 | MKBS7929V | 99% | 1,005.6 µg/mL | +/- 36.5867 |
| 9 | Benzyl alcohol | 100-51-6 | SHBK5943 | 99% | 1,005.4 µg/mL | +/- 36.5786 |
| 10 | 1,2-Dichlorobenzene | 95-50-1 | SHBN3835 | 99% | 1,003.9 µg/mL | +/- 36.5240 |
| 11 | 2-Methylphenol (o-cresol) | 95-48-7 | SHBN7598 | 99% | 1,002.3 µg/mL | +/- 36.4654 |
| 12 | 2,2'-oxybis(1-chloropropane) | 108-60-1 | 230329JLM | 99% | 1,004.3 µg/mL | +/- 36.5402 |
| 13 | 3-Methylphenol (m-cresol) | 108-39-4 | STBJ0710 | 99% | 502.1 µg/mL | +/- 18.2671 |
| 14 | 4-Methylphenol (p-cresol) | 106-44-5 | SHBN3411 | 99% | 501.9 µg/mL | +/- 18.2631 |
| 15 | N-Nitroso-di-n-propylamine | 621-64-7 | N63MG | 99% | 1,004.0 µg/mL | +/- 36.5281 |
| 16 | Hexachloroethane | 67-72-1 | QTORH | 99% | 1,006.1 µg/mL | +/- 36.6029 |
| 17 | Nitrobenzene | 98-95-3 | 10224044 | 99% | 1,003.1 µg/mL | +/- 36.4957 |

| | | | | | | | | |
|----|---|-----------|-------------|-----|---------|-------|-----|---------|
| 18 | Isophorone | 78-59-1 | MKCC9506 | 99% | 1,003.8 | µg/mL | +/- | 36.5220 |
| 19 | 2-Nitrophenol | 88-75-5 | RP230509C | 99% | 1,005.8 | µg/mL | +/- | 36.5948 |
| 20 | 2,4-Dimethylphenol | 105-67-9 | XW5GK | 99% | 1,004.2 | µg/mL | +/- | 36.5341 |
| 21 | Bis(2-chloroethoxy)methane | 111-91-1 | 13670200 | 99% | 1,006.3 | µg/mL | +/- | 36.6130 |
| 22 | 2,4-Dichlorophenol | 120-83-2 | BCBZ6787 | 99% | 1,004.0 | µg/mL | +/- | 36.5281 |
| 23 | 1,2,4-Trichlorobenzene | 120-82-1 | SHBM0526 | 99% | 1,007.1 | µg/mL | +/- | 36.6413 |
| 24 | Naphthalene | 91-20-3 | MKCH0219 | 99% | 1,006.7 | µg/mL | +/- | 36.6271 |
| 25 | 4-Chloroaniline | 106-47-8 | WXBC4601V | 99% | 1,005.4 | µg/mL | +/- | 36.5806 |
| 26 | Hexachlorobutadiene | 87-68-3 | X05J | 99% | 1,006.4 | µg/mL | +/- | 36.6170 |
| 27 | 4-Chloro-3-methylphenol | 59-50-7 | BCCD4461 | 99% | 1,004.7 | µg/mL | +/- | 36.5543 |
| 28 | 2-Methylnaphthalene | 91-57-6 | STBK0259 | 96% | 1,002.3 | µg/mL | +/- | 36.4679 |
| 29 | 1-Methylnaphthalene | 90-12-0 | 5234.00-3 | 99% | 1,000.0 | µg/mL | +/- | 36.3825 |
| 30 | Hexachlorocyclopentadiene | 77-47-4 | 0012019 | 99% | 1,006.1 | µg/mL | +/- | 36.6049 |
| 31 | 2,4,6-Trichlorophenol | 88-06-2 | STBJ5914 | 99% | 1,004.9 | µg/mL | +/- | 36.5604 |
| 32 | 2,4,5-Trichlorophenol | 95-95-4 | FHN01 | 98% | 1,006.5 | µg/mL | +/- | 36.6176 |
| 33 | 2-Chloronaphthalene | 91-58-7 | RPN70 | 99% | 1,004.4 | µg/mL | +/- | 36.5422 |
| 34 | 2-Nitroaniline | 88-74-4 | RP230509A | 99% | 1,002.3 | µg/mL | +/- | 36.4654 |
| 35 | 1,4-Dinitrobenzene | 100-25-4 | RP230512A | 99% | 1,001.5 | µg/mL | +/- | 36.4371 |
| 36 | Acenaphthylene | 208-96-8 | L10L | 95% | 1,003.4 | µg/mL | +/- | 36.5066 |
| 37 | 1,3-Dinitrobenzene | 99-65-0 | 1-DXX-24-1 | 99% | 1,004.8 | µg/mL | +/- | 36.5564 |
| 38 | Dimethylphthalate | 131-11-3 | 10117699 | 99% | 1,004.7 | µg/mL | +/- | 36.5543 |
| 39 | 2,6-Dinitrotoluene | 606-20-2 | BCCG1833 | 99% | 1,006.8 | µg/mL | +/- | 36.6312 |
| 40 | 1,2-Dinitrobenzene | 528-29-0 | RP230428 | 99% | 1,006.4 | µg/mL | +/- | 36.6170 |
| 41 | Acenaphthene | 83-32-9 | MKCR7169 | 99% | 1,000.0 | µg/mL | +/- | 36.3825 |
| 42 | 3-Nitroaniline | 99-09-2 | MKCH5457 | 99% | 1,004.8 | µg/mL | +/- | 36.5584 |
| 43 | 2,4-Dinitrophenol | 51-28-5 | DR230417RSR | 99% | 1,005.8 | µg/mL | +/- | 36.5948 |
| 44 | Dibenzofuran | 132-64-9 | MKCN1772 | 99% | 1,004.3 | µg/mL | +/- | 36.5402 |
| 45 | 2,4-Dinitrotoluene | 121-14-2 | MKAA0690V | 99% | 1,005.8 | µg/mL | +/- | 36.5928 |
| 46 | 4-Nitrophenol | 100-02-7 | RP230511A | 99% | 1,005.8 | µg/mL | +/- | 36.5948 |
| 47 | 2,3,4,6-Tetrachlorophenol | 58-90-2 | PR-30126 | 99% | 1,005.9 | µg/mL | +/- | 36.5988 |
| 48 | 2,3,5,6-Tetrachlorophenol | 935-95-5 | RP230513 | 99% | 1,004.9 | µg/mL | +/- | 36.5624 |
| 49 | Fluorene | 86-73-7 | 10236068 | 99% | 1,005.4 | µg/mL | +/- | 36.5806 |
| 50 | 4-Chlorophenyl phenyl ether | 7005-72-3 | MKCQ0984 | 99% | 1,004.3 | µg/mL | +/- | 36.5382 |
| 51 | Diethylphthalate | 84-66-2 | BCCD3396 | 99% | 1,007.1 | µg/mL | +/- | 36.6392 |
| 52 | 4-Nitroaniline | 100-01-6 | RP220906 | 99% | 1,005.3 | µg/mL | +/- | 36.5766 |
| 53 | 4,6-Dinitro-2-methylphenol (Dinitro-o-cresol) | 534-52-1 | 230505JLM | 99% | 1,003.8 | µg/mL | +/- | 36.5200 |

| | | | | | | | |
|----|----------------------------|----------|--------------|-----|---------|-------|-------------|
| 54 | Diphenylamine | 122-39-4 | MKCH1042 | 99% | 1,002.5 | µg/mL | +/- 36.4735 |
| 55 | Azobenzene | 103-33-3 | BCCG7339 | 98% | 1,003.5 | µg/mL | +/- 36.5106 |
| 56 | 4-Bromophenyl phenyl ether | 101-55-3 | STBH6361 | 99% | 1,005.6 | µg/mL | +/- 36.5847 |
| 57 | Hexachlorobenzene | 118-74-1 | 14257500 | 99% | 1,005.9 | µg/mL | +/- 36.5988 |
| 58 | Pentachlorophenol | 87-86-5 | RP230504 | 99% | 1,004.2 | µg/mL | +/- 36.5362 |
| 59 | Phenanthrene | 85-01-8 | MKCQ8876 | 99% | 1,004.1 | µg/mL | +/- 36.5321 |
| 60 | Anthracene | 120-12-7 | MKCR0570 | 99% | 1,008.3 | µg/mL | +/- 36.6857 |
| 61 | Carbazole | 86-74-8 | 14351100 | 99% | 1,005.1 | µg/mL | +/- 36.5665 |
| 62 | Di-n-butylphthalate | 84-74-2 | MKCN4337 | 99% | 1,006.4 | µg/mL | +/- 36.6170 |
| 63 | Fluoranthene | 206-44-0 | MKCQ4728 | 99% | 1,003.7 | µg/mL | +/- 36.5159 |
| 64 | Pyrene | 129-00-0 | BCCG7845 | 99% | 1,004.3 | µg/mL | +/- 36.5382 |
| 65 | Benzyl butyl phthalate | 85-68-7 | X12I018 | 99% | 1,003.4 | µg/mL | +/- 36.5058 |
| 66 | Bis(2-ethylhexyl)adipate | 103-23-1 | MKCM1988 | 99% | 1,003.4 | µg/mL | +/- 36.5079 |
| 67 | Benz(a)anthracene | 56-55-3 | 0012022BAA | 97% | 1,004.9 | µg/mL | +/- 36.5624 |
| 68 | Chrysene | 218-01-9 | RP230512B | 99% | 1,006.2 | µg/mL | +/- 36.6089 |
| 69 | Bis(2-ethylhexyl)phthalate | 117-81-7 | MKCQ3468 | 99% | 1,003.8 | µg/mL | +/- 36.5220 |
| 70 | Di-n-octyl phthalate | 117-84-0 | 13994100 | 99% | 1,004.2 | µg/mL | +/- 36.5341 |
| 71 | Benzo(b)fluoranthene | 205-99-2 | 012013B | 99% | 1,008.4 | µg/mL | +/- 36.6877 |
| 72 | Benzo(k)fluoranthene | 207-08-9 | 012022K | 99% | 1,004.1 | µg/mL | +/- 36.5301 |
| 73 | Benzo(a)pyrene | 50-32-8 | J6IUE | 99% | 1,006.4 | µg/mL | +/- 36.6170 |
| 74 | Indeno(1,2,3-cd)pyrene | 193-39-5 | 12-JKL-118-9 | 97% | 1,002.0 | µg/mL | +/- 36.4557 |
| 75 | Dibenz(a,h)anthracene | 53-70-3 | ER032211-01 | 99% | 1,006.1 | µg/mL | +/- 36.6029 |
| 76 | Benzo(g,h,i)perylene | 191-24-2 | RP230511B | 98% | 1,006.8 | µg/mL | +/- 36.6295 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant flow 1.8 mL/min.

Temp. Program:

80°C (hold 0.1 min.) to 330°C
@ 9.6°C/min. (hold 2.86 min.)

Inj. Temp:

250°C

Det. Temp:

340°C

Det. Type:

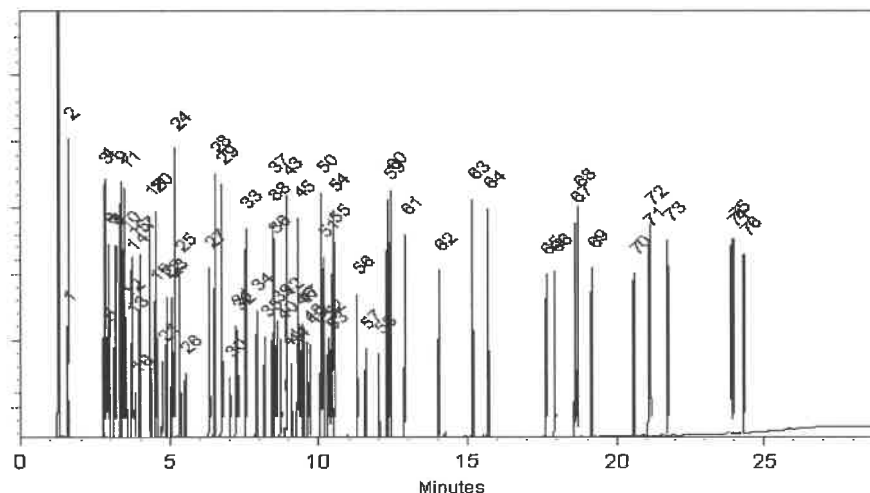
FID

Split Vent:

100 ml/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Tom Suckar - Mix Technician

Date Mixed: 11-May-2023

Balance Serial # 1128353505


Christie Mills - Operations Tech II - ARM QC

Date Passed: 18-May-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31850 **Lot No.:** A0197982

Description : 8270 MegaMix®
8270 MegaMix® 500-1,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : November 30, 2024 **Storage:** 0°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

511877
↓
511906

RC/
11/30/23

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------------|----------|-----------|--------|-----------------------------|--|
| 1 | Pyridine | 110-86-1 | SHBN7324 | 99% | 1,006.9 µg/mL | +/- 36.6352 |
| 2 | N-Nitrosodimethylamine | 62-75-9 | 230209JLM | 99% | 1,007.4 µg/mL | +/- 36.6514 |
| 3 | Phenol | 108-95-2 | MKCK1120 | 99% | 1,005.3 µg/mL | +/- 36.5746 |
| 4 | Aniline | 62-53-3 | X22F726 | 99% | 1,004.6 µg/mL | +/- 36.5503 |
| 5 | Bis(2-chloroethyl)ether | 111-44-4 | SHBL6942 | 99% | 1,005.1 µg/mL | +/- 36.5665 |
| 6 | 2-Chlorophenol | 95-57-8 | STBJ3909 | 99% | 1,007.1 µg/mL | +/- 36.6392 |
| 7 | 1,3-Dichlorobenzene | 541-73-1 | BCBZ7498 | 99% | 1,006.7 µg/mL | +/- 36.6251 |
| 8 | 1,4-Dichlorobenzene | 106-46-7 | MKBS7929V | 99% | 1,005.6 µg/mL | +/- 36.5867 |
| 9 | Benzyl alcohol | 100-51-6 | SHBK5943 | 99% | 1,005.4 µg/mL | +/- 36.5786 |
| 10 | 1,2-Dichlorobenzene | 95-50-1 | SHBN3835 | 99% | 1,003.9 µg/mL | +/- 36.5240 |
| 11 | 2-Methylphenol (o-cresol) | 95-48-7 | SHBN7598 | 99% | 1,002.3 µg/mL | +/- 36.4654 |
| 12 | 2,2'-oxybis(1-chloropropane) | 108-60-1 | 230329JLM | 99% | 1,004.3 µg/mL | +/- 36.5402 |
| 13 | 3-Methylphenol (m-cresol) | 108-39-4 | STBJ0710 | 99% | 502.1 µg/mL | +/- 18.2671 |
| 14 | 4-Methylphenol (p-cresol) | 106-44-5 | SHBN3411 | 99% | 501.9 µg/mL | +/- 18.2631 |
| 15 | N-Nitroso-di-n-propylamine | 621-64-7 | N63MG | 99% | 1,004.0 µg/mL | +/- 36.5281 |
| 16 | Hexachloroethane | 67-72-1 | QTORH | 99% | 1,006.1 µg/mL | +/- 36.6029 |
| 17 | Nitrobenzene | 98-95-3 | 10224044 | 99% | 1,003.1 µg/mL | +/- 36.4957 |

| | | | | | | | | |
|----|---|-----------|-------------|-----|---------|-------|-----|---------|
| 18 | Isophorone | 78-59-1 | MKCC9506 | 99% | 1,003.8 | µg/mL | +/- | 36.5220 |
| 19 | 2-Nitrophenol | 88-75-5 | RP230509C | 99% | 1,005.8 | µg/mL | +/- | 36.5948 |
| 20 | 2,4-Dimethylphenol | 105-67-9 | XW5GK | 99% | 1,004.2 | µg/mL | +/- | 36.5341 |
| 21 | Bis(2-chloroethoxy)methane | 111-91-1 | 13670200 | 99% | 1,006.3 | µg/mL | +/- | 36.6130 |
| 22 | 2,4-Dichlorophenol | 120-83-2 | BCBZ6787 | 99% | 1,004.0 | µg/mL | +/- | 36.5281 |
| 23 | 1,2,4-Trichlorobenzene | 120-82-1 | SHBM0526 | 99% | 1,007.1 | µg/mL | +/- | 36.6413 |
| 24 | Naphthalene | 91-20-3 | MKCH0219 | 99% | 1,006.7 | µg/mL | +/- | 36.6271 |
| 25 | 4-Chloroaniline | 106-47-8 | WXBC4601V | 99% | 1,005.4 | µg/mL | +/- | 36.5806 |
| 26 | Hexachlorobutadiene | 87-68-3 | X05J | 99% | 1,006.4 | µg/mL | +/- | 36.6170 |
| 27 | 4-Chloro-3-methylphenol | 59-50-7 | BCCD4461 | 99% | 1,004.7 | µg/mL | +/- | 36.5543 |
| 28 | 2-Methylnaphthalene | 91-57-6 | STBK0259 | 96% | 1,002.3 | µg/mL | +/- | 36.4679 |
| 29 | 1-Methylnaphthalene | 90-12-0 | 5234.00-3 | 99% | 1,000.0 | µg/mL | +/- | 36.3825 |
| 30 | Hexachlorocyclopentadiene | 77-47-4 | 0012019 | 99% | 1,006.1 | µg/mL | +/- | 36.6049 |
| 31 | 2,4,6-Trichlorophenol | 88-06-2 | STBJ5914 | 99% | 1,004.9 | µg/mL | +/- | 36.5604 |
| 32 | 2,4,5-Trichlorophenol | 95-95-4 | FHN01 | 98% | 1,006.5 | µg/mL | +/- | 36.6176 |
| 33 | 2-Chloronaphthalene | 91-58-7 | RPN70 | 99% | 1,004.4 | µg/mL | +/- | 36.5422 |
| 34 | 2-Nitroaniline | 88-74-4 | RP230509A | 99% | 1,002.3 | µg/mL | +/- | 36.4654 |
| 35 | 1,4-Dinitrobenzene | 100-25-4 | RP230512A | 99% | 1,001.5 | µg/mL | +/- | 36.4371 |
| 36 | Acenaphthylene | 208-96-8 | L10L | 95% | 1,003.4 | µg/mL | +/- | 36.5066 |
| 37 | 1,3-Dinitrobenzene | 99-65-0 | 1-DXX-24-1 | 99% | 1,004.8 | µg/mL | +/- | 36.5564 |
| 38 | Dimethylphthalate | 131-11-3 | 10117699 | 99% | 1,004.7 | µg/mL | +/- | 36.5543 |
| 39 | 2,6-Dinitrotoluene | 606-20-2 | BCCG1833 | 99% | 1,006.8 | µg/mL | +/- | 36.6312 |
| 40 | 1,2-Dinitrobenzene | 528-29-0 | RP230428 | 99% | 1,006.4 | µg/mL | +/- | 36.6170 |
| 41 | Acenaphthene | 83-32-9 | MKCR7169 | 99% | 1,000.0 | µg/mL | +/- | 36.3825 |
| 42 | 3-Nitroaniline | 99-09-2 | MKCH5457 | 99% | 1,004.8 | µg/mL | +/- | 36.5584 |
| 43 | 2,4-Dinitrophenol | 51-28-5 | DR230417RSR | 99% | 1,005.8 | µg/mL | +/- | 36.5948 |
| 44 | Dibenzofuran | 132-64-9 | MKCN1772 | 99% | 1,004.3 | µg/mL | +/- | 36.5402 |
| 45 | 2,4-Dinitrotoluene | 121-14-2 | MKAA0690V | 99% | 1,005.8 | µg/mL | +/- | 36.5928 |
| 46 | 4-Nitrophenol | 100-02-7 | RP230511A | 99% | 1,005.8 | µg/mL | +/- | 36.5948 |
| 47 | 2,3,4,6-Tetrachlorophenol | 58-90-2 | PR-30126 | 99% | 1,005.9 | µg/mL | +/- | 36.5988 |
| 48 | 2,3,5,6-Tetrachlorophenol | 935-95-5 | RP230513 | 99% | 1,004.9 | µg/mL | +/- | 36.5624 |
| 49 | Fluorene | 86-73-7 | 10236068 | 99% | 1,005.4 | µg/mL | +/- | 36.5806 |
| 50 | 4-Chlorophenyl phenyl ether | 7005-72-3 | MKCQ0984 | 99% | 1,004.3 | µg/mL | +/- | 36.5382 |
| 51 | Diethylphthalate | 84-66-2 | BCCD3396 | 99% | 1,007.1 | µg/mL | +/- | 36.6392 |
| 52 | 4-Nitroaniline | 100-01-6 | RP220906 | 99% | 1,005.3 | µg/mL | +/- | 36.5766 |
| 53 | 4,6-Dinitro-2-methylphenol (Dinitro-o-cresol) | 534-52-1 | 230505JLM | 99% | 1,003.8 | µg/mL | +/- | 36.5200 |

| | | | | | | | |
|----|----------------------------|----------|--------------|-----|---------|-------|-------------|
| 54 | Diphenylamine | 122-39-4 | MKCH1042 | 99% | 1,002.5 | µg/mL | +/- 36.4735 |
| 55 | Azobenzene | 103-33-3 | BCCG7339 | 98% | 1,003.5 | µg/mL | +/- 36.5106 |
| 56 | 4-Bromophenyl phenyl ether | 101-55-3 | STBH6361 | 99% | 1,005.6 | µg/mL | +/- 36.5847 |
| 57 | Hexachlorobenzene | 118-74-1 | 14257500 | 99% | 1,005.9 | µg/mL | +/- 36.5988 |
| 58 | Pentachlorophenol | 87-86-5 | RP230504 | 99% | 1,004.2 | µg/mL | +/- 36.5362 |
| 59 | Phenanthrene | 85-01-8 | MKCQ8876 | 99% | 1,004.1 | µg/mL | +/- 36.5321 |
| 60 | Anthracene | 120-12-7 | MKCR0570 | 99% | 1,008.3 | µg/mL | +/- 36.6857 |
| 61 | Carbazole | 86-74-8 | 14351100 | 99% | 1,005.1 | µg/mL | +/- 36.5665 |
| 62 | Di-n-butylphthalate | 84-74-2 | MKCN4337 | 99% | 1,006.4 | µg/mL | +/- 36.6170 |
| 63 | Fluoranthene | 206-44-0 | MKCQ4728 | 99% | 1,003.7 | µg/mL | +/- 36.5159 |
| 64 | Pyrene | 129-00-0 | BCCG7845 | 99% | 1,004.3 | µg/mL | +/- 36.5382 |
| 65 | Benzyl butyl phthalate | 85-68-7 | X12I018 | 99% | 1,003.4 | µg/mL | +/- 36.5058 |
| 66 | Bis(2-ethylhexyl)adipate | 103-23-1 | MKCM1988 | 99% | 1,003.4 | µg/mL | +/- 36.5079 |
| 67 | Benz(a)anthracene | 56-55-3 | 0012022BAA | 97% | 1,004.9 | µg/mL | +/- 36.5624 |
| 68 | Chrysene | 218-01-9 | RP230512B | 99% | 1,006.2 | µg/mL | +/- 36.6089 |
| 69 | Bis(2-ethylhexyl)phthalate | 117-81-7 | MKCQ3468 | 99% | 1,003.8 | µg/mL | +/- 36.5220 |
| 70 | Di-n-octyl phthalate | 117-84-0 | 13994100 | 99% | 1,004.2 | µg/mL | +/- 36.5341 |
| 71 | Benzo(b)fluoranthene | 205-99-2 | 012013B | 99% | 1,008.4 | µg/mL | +/- 36.6877 |
| 72 | Benzo(k)fluoranthene | 207-08-9 | 012022K | 99% | 1,004.1 | µg/mL | +/- 36.5301 |
| 73 | Benzo(a)pyrene | 50-32-8 | J6IUE | 99% | 1,006.4 | µg/mL | +/- 36.6170 |
| 74 | Indeno(1,2,3-cd)pyrene | 193-39-5 | 12-JKL-118-9 | 97% | 1,002.0 | µg/mL | +/- 36.4557 |
| 75 | Dibenz(a,h)anthracene | 53-70-3 | ER032211-01 | 99% | 1,006.1 | µg/mL | +/- 36.6029 |
| 76 | Benzo(g,h,i)perylene | 191-24-2 | RP230511B | 98% | 1,006.8 | µg/mL | +/- 36.6295 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant flow 1.8 mL/min.

Temp. Program:

80°C (hold 0.1 min.) to 330°C
@ 9.6°C/min. (hold 2.86 min.)

Inj. Temp:

250°C

Det. Temp:

340°C

Det. Type:

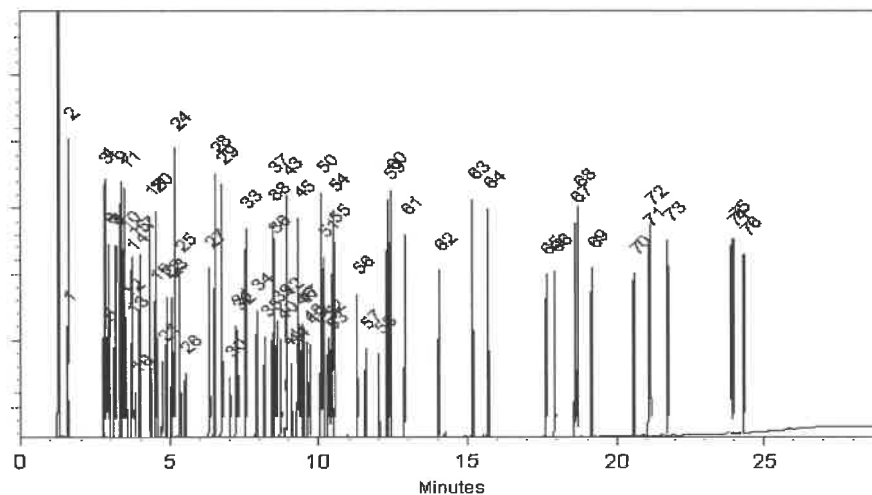
FID

Split Vent:

100 ml/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Tom Suckar - Mix Technician

Date Mixed: 11-May-2023

Balance Serial # 1128353505


Christie Mills - Operations Tech II - ARM QC

Date Passed: 18-May-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No.: 31850 Lot No.: A0197982
Description: 8270 MegaMix®
8270 MegaMix® 500-1,000µg/mL, Methylene Chloride, 1mL/ampul
Container Size: 2 mL Pkg Amt: > 1 mL
Expiration Date: November 30, 2024 Storage: 0°C or colder
Handling: Sonication required. Mix is photosensitive. Ship: Ambient

511877
↓
511906
RC/
11/30/23

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------------|----------|-----------|--------|-----------------------------|--|
| 1 | Pyridine | 110-86-1 | SHBN7324 | 99% | 1,006.9 µg/mL | +/- 36.6352 |
| 2 | N-Nitrosodimethylamine | 62-75-9 | 230209JLM | 99% | 1,007.4 µg/mL | +/- 36.6514 |
| 3 | Phenol | 108-95-2 | MKCK1120 | 99% | 1,005.3 µg/mL | +/- 36.5746 |
| 4 | Aniline | 62-53-3 | X22F726 | 99% | 1,004.6 µg/mL | +/- 36.5503 |
| 5 | Bis(2-chloroethyl)ether | 111-44-4 | SHBL6942 | 99% | 1,005.1 µg/mL | +/- 36.5665 |
| 6 | 2-Chlorophenol | 95-57-8 | STBJ3909 | 99% | 1,007.1 µg/mL | +/- 36.6392 |
| 7 | 1,3-Dichlorobenzene | 541-73-1 | BCBZ7498 | 99% | 1,006.7 µg/mL | +/- 36.6251 |
| 8 | 1,4-Dichlorobenzene | 106-46-7 | MKBS7929V | 99% | 1,005.6 µg/mL | +/- 36.5867 |
| 9 | Benzyl alcohol | 100-51-6 | SHBK5943 | 99% | 1,005.4 µg/mL | +/- 36.5786 |
| 10 | 1,2-Dichlorobenzene | 95-50-1 | SHBN3835 | 99% | 1,003.9 µg/mL | +/- 36.5240 |
| 11 | 2-Methylphenol (o-cresol) | 95-48-7 | SHBN7598 | 99% | 1,002.3 µg/mL | +/- 36.4654 |
| 12 | 2,2'-oxybis(1-chloropropane) | 108-60-1 | 230329JLM | 99% | 1,004.3 µg/mL | +/- 36.5402 |
| 13 | 3-Methylphenol (m-cresol) | 108-39-4 | STBJ0710 | 99% | 502.1 µg/mL | +/- 18.2671 |
| 14 | 4-Methylphenol (p-cresol) | 106-44-5 | SHBN3411 | 99% | 501.9 µg/mL | +/- 18.2631 |
| 15 | N-Nitroso-di-n-propylamine | 621-64-7 | N63MG | 99% | 1,004.0 µg/mL | +/- 36.5281 |
| 16 | Hexachloroethane | 67-72-1 | QTORH | 99% | 1,006.1 µg/mL | +/- 36.6029 |
| 17 | Nitrobenzene | 98-95-3 | 10224044 | 99% | 1,003.1 µg/mL | +/- 36.4957 |

| | | | | | | | |
|----|---|-----------|-------------|-----|---------|-------|-------------|
| 18 | Isophorone | 78-59-1 | MKCC9506 | 99% | 1,003.8 | µg/mL | +/- 36.5220 |
| 19 | 2-Nitrophenol | 88-75-5 | RP230509C | 99% | 1,005.8 | µg/mL | +/- 36.5948 |
| 20 | 2,4-Dimethylphenol | 105-67-9 | XW5GK | 99% | 1,004.2 | µg/mL | +/- 36.5341 |
| 21 | Bis(2-chloroethoxy)methane | 111-91-1 | 13670200 | 99% | 1,006.3 | µg/mL | +/- 36.6130 |
| 22 | 2,4-Dichlorophenol | 120-83-2 | BCBZ6787 | 99% | 1,004.0 | µg/mL | +/- 36.5281 |
| 23 | 1,2,4-Trichlorobenzene | 120-82-1 | SHBM0526 | 99% | 1,007.1 | µg/mL | +/- 36.6413 |
| 24 | Naphthalene | 91-20-3 | MKCH0219 | 99% | 1,006.7 | µg/mL | +/- 36.6271 |
| 25 | 4-Chloroaniline | 106-47-8 | WXBC4601V | 99% | 1,005.4 | µg/mL | +/- 36.5806 |
| 26 | Hexachlorobutadiene | 87-68-3 | X05J | 99% | 1,006.4 | µg/mL | +/- 36.6170 |
| 27 | 4-Chloro-3-methylphenol | 59-50-7 | BCCD4461 | 99% | 1,004.7 | µg/mL | +/- 36.5543 |
| 28 | 2-Methylnaphthalene | 91-57-6 | STBK0259 | 96% | 1,002.3 | µg/mL | +/- 36.4679 |
| 29 | 1-Methylnaphthalene | 90-12-0 | 5234.00-3 | 99% | 1,000.0 | µg/mL | +/- 36.3825 |
| 30 | Hexachlorocyclopentadiene | 77-47-4 | 0012019 | 99% | 1,006.1 | µg/mL | +/- 36.6049 |
| 31 | 2,4,6-Trichlorophenol | 88-06-2 | STBJ5914 | 99% | 1,004.9 | µg/mL | +/- 36.5604 |
| 32 | 2,4,5-Trichlorophenol | 95-95-4 | FHN01 | 98% | 1,006.5 | µg/mL | +/- 36.6176 |
| 33 | 2-Chloronaphthalene | 91-58-7 | RPN70 | 99% | 1,004.4 | µg/mL | +/- 36.5422 |
| 34 | 2-Nitroaniline | 88-74-4 | RP230509A | 99% | 1,002.3 | µg/mL | +/- 36.4654 |
| 35 | 1,4-Dinitrobenzene | 100-25-4 | RP230512A | 99% | 1,001.5 | µg/mL | +/- 36.4371 |
| 36 | Acenaphthylene | 208-96-8 | L10L | 95% | 1,003.4 | µg/mL | +/- 36.5066 |
| 37 | 1,3-Dinitrobenzene | 99-65-0 | 1-DXX-24-1 | 99% | 1,004.8 | µg/mL | +/- 36.5564 |
| 38 | Dimethylphthalate | 131-11-3 | 10117699 | 99% | 1,004.7 | µg/mL | +/- 36.5543 |
| 39 | 2,6-Dinitrotoluene | 606-20-2 | BCCG1833 | 99% | 1,006.8 | µg/mL | +/- 36.6312 |
| 40 | 1,2-Dinitrobenzene | 528-29-0 | RP230428 | 99% | 1,006.4 | µg/mL | +/- 36.6170 |
| 41 | Acenaphthene | 83-32-9 | MKCR7169 | 99% | 1,000.0 | µg/mL | +/- 36.3825 |
| 42 | 3-Nitroaniline | 99-09-2 | MKCH5457 | 99% | 1,004.8 | µg/mL | +/- 36.5584 |
| 43 | 2,4-Dinitrophenol | 51-28-5 | DR230417RSR | 99% | 1,005.8 | µg/mL | +/- 36.5948 |
| 44 | Dibenzofuran | 132-64-9 | MKCN1772 | 99% | 1,004.3 | µg/mL | +/- 36.5402 |
| 45 | 2,4-Dinitrotoluene | 121-14-2 | MKAA0690V | 99% | 1,005.8 | µg/mL | +/- 36.5928 |
| 46 | 4-Nitrophenol | 100-02-7 | RP230511A | 99% | 1,005.8 | µg/mL | +/- 36.5948 |
| 47 | 2,3,4,6-Tetrachlorophenol | 58-90-2 | PR-30126 | 99% | 1,005.9 | µg/mL | +/- 36.5988 |
| 48 | 2,3,5,6-Tetrachlorophenol | 935-95-5 | RP230513 | 99% | 1,004.9 | µg/mL | +/- 36.5624 |
| 49 | Fluorene | 86-73-7 | 10236068 | 99% | 1,005.4 | µg/mL | +/- 36.5806 |
| 50 | 4-Chlorophenyl phenyl ether | 7005-72-3 | MKCQ0984 | 99% | 1,004.3 | µg/mL | +/- 36.5382 |
| 51 | Diethylphthalate | 84-66-2 | BCCD3396 | 99% | 1,007.1 | µg/mL | +/- 36.6392 |
| 52 | 4-Nitroaniline | 100-01-6 | RP220906 | 99% | 1,005.3 | µg/mL | +/- 36.5766 |
| 53 | 4,6-Dinitro-2-methylphenol (Dinitro-o-cresol) | 534-52-1 | 230505JLM | 99% | 1,003.8 | µg/mL | +/- 36.5200 |

| | | | | | | | |
|----|----------------------------|----------|--------------|-----|---------|-------|-------------|
| 54 | Diphenylamine | 122-39-4 | MKCH1042 | 99% | 1,002.5 | µg/mL | +/- 36.4735 |
| 55 | Azobenzene | 103-33-3 | BCCG7339 | 98% | 1,003.5 | µg/mL | +/- 36.5106 |
| 56 | 4-Bromophenyl phenyl ether | 101-55-3 | STBH6361 | 99% | 1,005.6 | µg/mL | +/- 36.5847 |
| 57 | Hexachlorobenzene | 118-74-1 | 14257500 | 99% | 1,005.9 | µg/mL | +/- 36.5988 |
| 58 | Pentachlorophenol | 87-86-5 | RP230504 | 99% | 1,004.2 | µg/mL | +/- 36.5362 |
| 59 | Phenanthrene | 85-01-8 | MKCQ8876 | 99% | 1,004.1 | µg/mL | +/- 36.5321 |
| 60 | Anthracene | 120-12-7 | MKCR0570 | 99% | 1,008.3 | µg/mL | +/- 36.6857 |
| 61 | Carbazole | 86-74-8 | 14351100 | 99% | 1,005.1 | µg/mL | +/- 36.5665 |
| 62 | Di-n-butylphthalate | 84-74-2 | MKCN4337 | 99% | 1,006.4 | µg/mL | +/- 36.6170 |
| 63 | Fluoranthene | 206-44-0 | MKCQ4728 | 99% | 1,003.7 | µg/mL | +/- 36.5159 |
| 64 | Pyrene | 129-00-0 | BCCG7845 | 99% | 1,004.3 | µg/mL | +/- 36.5382 |
| 65 | Benzyl butyl phthalate | 85-68-7 | X12I018 | 99% | 1,003.4 | µg/mL | +/- 36.5058 |
| 66 | Bis(2-ethylhexyl)adipate | 103-23-1 | MKCM1988 | 99% | 1,003.4 | µg/mL | +/- 36.5079 |
| 67 | Benz(a)anthracene | 56-55-3 | 0012022BAA | 97% | 1,004.9 | µg/mL | +/- 36.5624 |
| 68 | Chrysene | 218-01-9 | RP230512B | 99% | 1,006.2 | µg/mL | +/- 36.6089 |
| 69 | Bis(2-ethylhexyl)phthalate | 117-81-7 | MKCQ3468 | 99% | 1,003.8 | µg/mL | +/- 36.5220 |
| 70 | Di-n-octyl phthalate | 117-84-0 | 13994100 | 99% | 1,004.2 | µg/mL | +/- 36.5341 |
| 71 | Benzo(b)fluoranthene | 205-99-2 | 012013B | 99% | 1,008.4 | µg/mL | +/- 36.6877 |
| 72 | Benzo(k)fluoranthene | 207-08-9 | 012022K | 99% | 1,004.1 | µg/mL | +/- 36.5301 |
| 73 | Benzo(a)pyrene | 50-32-8 | J6IUE | 99% | 1,006.4 | µg/mL | +/- 36.6170 |
| 74 | Indeno(1,2,3-cd)pyrene | 193-39-5 | 12-JKL-118-9 | 97% | 1,002.0 | µg/mL | +/- 36.4557 |
| 75 | Dibenz(a,h)anthracene | 53-70-3 | ER032211-01 | 99% | 1,006.1 | µg/mL | +/- 36.6029 |
| 76 | Benzo(g,h,i)perylene | 191-24-2 | RP230511B | 98% | 1,006.8 | µg/mL | +/- 36.6295 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant flow 1.8 mL/min.

Temp. Program:

80°C (hold 0.1 min.) to 330°C
@ 9.6°C/min. (hold 2.86 min.)

Inj. Temp:

250°C

Det. Temp:

340°C

Det. Type:

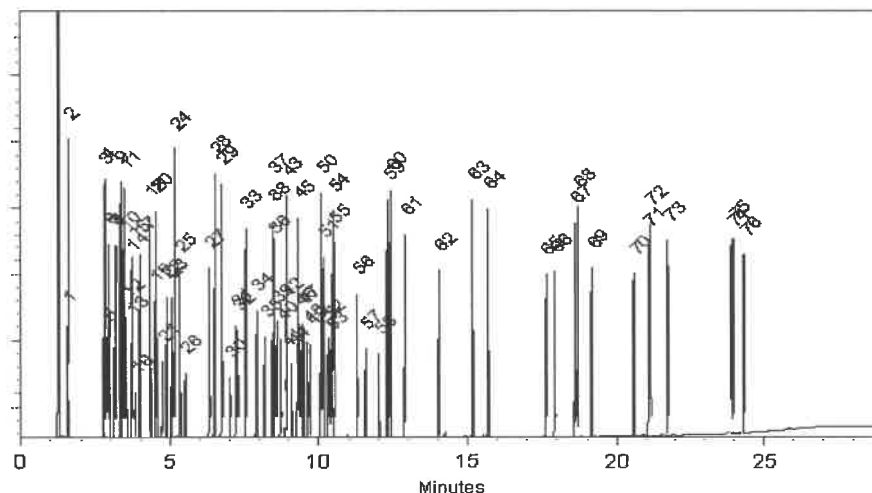
FID

Split Vent:

100 ml/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Tom Suckar - Mix Technician

Date Mixed: 11-May-2023

Balance Serial # 1128353505


Christie Mills - Operations Tech II - ARM QC

Date Passed: 18-May-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31850 **Lot No.:** A0197982

Description : 8270 MegaMix®
8270 MegaMix® 500-1,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : November 30, 2024 **Storage:** 0°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

511877
↓
511906

RC/
11/30/23

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------------|----------|-----------|--------|-----------------------------|--|
| 1 | Pyridine | 110-86-1 | SHBN7324 | 99% | 1,006.9 µg/mL | +/- 36.6352 |
| 2 | N-Nitrosodimethylamine | 62-75-9 | 230209JLM | 99% | 1,007.4 µg/mL | +/- 36.6514 |
| 3 | Phenol | 108-95-2 | MKCK1120 | 99% | 1,005.3 µg/mL | +/- 36.5746 |
| 4 | Aniline | 62-53-3 | X22F726 | 99% | 1,004.6 µg/mL | +/- 36.5503 |
| 5 | Bis(2-chloroethyl)ether | 111-44-4 | SHBL6942 | 99% | 1,005.1 µg/mL | +/- 36.5665 |
| 6 | 2-Chlorophenol | 95-57-8 | STBJ3909 | 99% | 1,007.1 µg/mL | +/- 36.6392 |
| 7 | 1,3-Dichlorobenzene | 541-73-1 | BCBZ7498 | 99% | 1,006.7 µg/mL | +/- 36.6251 |
| 8 | 1,4-Dichlorobenzene | 106-46-7 | MKBS7929V | 99% | 1,005.6 µg/mL | +/- 36.5867 |
| 9 | Benzyl alcohol | 100-51-6 | SHBK5943 | 99% | 1,005.4 µg/mL | +/- 36.5786 |
| 10 | 1,2-Dichlorobenzene | 95-50-1 | SHBN3835 | 99% | 1,003.9 µg/mL | +/- 36.5240 |
| 11 | 2-Methylphenol (o-cresol) | 95-48-7 | SHBN7598 | 99% | 1,002.3 µg/mL | +/- 36.4654 |
| 12 | 2,2'-oxybis(1-chloropropane) | 108-60-1 | 230329JLM | 99% | 1,004.3 µg/mL | +/- 36.5402 |
| 13 | 3-Methylphenol (m-cresol) | 108-39-4 | STBJ0710 | 99% | 502.1 µg/mL | +/- 18.2671 |
| 14 | 4-Methylphenol (p-cresol) | 106-44-5 | SHBN3411 | 99% | 501.9 µg/mL | +/- 18.2631 |
| 15 | N-Nitroso-di-n-propylamine | 621-64-7 | N63MG | 99% | 1,004.0 µg/mL | +/- 36.5281 |
| 16 | Hexachloroethane | 67-72-1 | QTORH | 99% | 1,006.1 µg/mL | +/- 36.6029 |
| 17 | Nitrobenzene | 98-95-3 | 10224044 | 99% | 1,003.1 µg/mL | +/- 36.4957 |

| | | | | | | | | |
|----|---|-----------|-------------|-----|---------|-------|-----|---------|
| 18 | Isophorone | 78-59-1 | MKCC9506 | 99% | 1,003.8 | µg/mL | +/- | 36.5220 |
| 19 | 2-Nitrophenol | 88-75-5 | RP230509C | 99% | 1,005.8 | µg/mL | +/- | 36.5948 |
| 20 | 2,4-Dimethylphenol | 105-67-9 | XW5GK | 99% | 1,004.2 | µg/mL | +/- | 36.5341 |
| 21 | Bis(2-chloroethoxy)methane | 111-91-1 | 13670200 | 99% | 1,006.3 | µg/mL | +/- | 36.6130 |
| 22 | 2,4-Dichlorophenol | 120-83-2 | BCBZ6787 | 99% | 1,004.0 | µg/mL | +/- | 36.5281 |
| 23 | 1,2,4-Trichlorobenzene | 120-82-1 | SHBM0526 | 99% | 1,007.1 | µg/mL | +/- | 36.6413 |
| 24 | Naphthalene | 91-20-3 | MKCH0219 | 99% | 1,006.7 | µg/mL | +/- | 36.6271 |
| 25 | 4-Chloroaniline | 106-47-8 | WXBC4601V | 99% | 1,005.4 | µg/mL | +/- | 36.5806 |
| 26 | Hexachlorobutadiene | 87-68-3 | X05J | 99% | 1,006.4 | µg/mL | +/- | 36.6170 |
| 27 | 4-Chloro-3-methylphenol | 59-50-7 | BCCD4461 | 99% | 1,004.7 | µg/mL | +/- | 36.5543 |
| 28 | 2-Methylnaphthalene | 91-57-6 | STBK0259 | 96% | 1,002.3 | µg/mL | +/- | 36.4679 |
| 29 | 1-Methylnaphthalene | 90-12-0 | 5234.00-3 | 99% | 1,000.0 | µg/mL | +/- | 36.3825 |
| 30 | Hexachlorocyclopentadiene | 77-47-4 | 0012019 | 99% | 1,006.1 | µg/mL | +/- | 36.6049 |
| 31 | 2,4,6-Trichlorophenol | 88-06-2 | STBJ5914 | 99% | 1,004.9 | µg/mL | +/- | 36.5604 |
| 32 | 2,4,5-Trichlorophenol | 95-95-4 | FHN01 | 98% | 1,006.5 | µg/mL | +/- | 36.6176 |
| 33 | 2-Chloronaphthalene | 91-58-7 | RPN70 | 99% | 1,004.4 | µg/mL | +/- | 36.5422 |
| 34 | 2-Nitroaniline | 88-74-4 | RP230509A | 99% | 1,002.3 | µg/mL | +/- | 36.4654 |
| 35 | 1,4-Dinitrobenzene | 100-25-4 | RP230512A | 99% | 1,001.5 | µg/mL | +/- | 36.4371 |
| 36 | Acenaphthylene | 208-96-8 | L10L | 95% | 1,003.4 | µg/mL | +/- | 36.5066 |
| 37 | 1,3-Dinitrobenzene | 99-65-0 | 1-DXX-24-1 | 99% | 1,004.8 | µg/mL | +/- | 36.5564 |
| 38 | Dimethylphthalate | 131-11-3 | 10117699 | 99% | 1,004.7 | µg/mL | +/- | 36.5543 |
| 39 | 2,6-Dinitrotoluene | 606-20-2 | BCCG1833 | 99% | 1,006.8 | µg/mL | +/- | 36.6312 |
| 40 | 1,2-Dinitrobenzene | 528-29-0 | RP230428 | 99% | 1,006.4 | µg/mL | +/- | 36.6170 |
| 41 | Acenaphthene | 83-32-9 | MKCR7169 | 99% | 1,000.0 | µg/mL | +/- | 36.3825 |
| 42 | 3-Nitroaniline | 99-09-2 | MKCH5457 | 99% | 1,004.8 | µg/mL | +/- | 36.5584 |
| 43 | 2,4-Dinitrophenol | 51-28-5 | DR230417RSR | 99% | 1,005.8 | µg/mL | +/- | 36.5948 |
| 44 | Dibenzofuran | 132-64-9 | MKCN1772 | 99% | 1,004.3 | µg/mL | +/- | 36.5402 |
| 45 | 2,4-Dinitrotoluene | 121-14-2 | MKAA0690V | 99% | 1,005.8 | µg/mL | +/- | 36.5928 |
| 46 | 4-Nitrophenol | 100-02-7 | RP230511A | 99% | 1,005.8 | µg/mL | +/- | 36.5948 |
| 47 | 2,3,4,6-Tetrachlorophenol | 58-90-2 | PR-30126 | 99% | 1,005.9 | µg/mL | +/- | 36.5988 |
| 48 | 2,3,5,6-Tetrachlorophenol | 935-95-5 | RP230513 | 99% | 1,004.9 | µg/mL | +/- | 36.5624 |
| 49 | Fluorene | 86-73-7 | 10236068 | 99% | 1,005.4 | µg/mL | +/- | 36.5806 |
| 50 | 4-Chlorophenyl phenyl ether | 7005-72-3 | MKCQ0984 | 99% | 1,004.3 | µg/mL | +/- | 36.5382 |
| 51 | Diethylphthalate | 84-66-2 | BCCD3396 | 99% | 1,007.1 | µg/mL | +/- | 36.6392 |
| 52 | 4-Nitroaniline | 100-01-6 | RP220906 | 99% | 1,005.3 | µg/mL | +/- | 36.5766 |
| 53 | 4,6-Dinitro-2-methylphenol (Dinitro-o-cresol) | 534-52-1 | 230505JLM | 99% | 1,003.8 | µg/mL | +/- | 36.5200 |

| | | | | | | | |
|----|----------------------------|----------|--------------|-----|---------|-------|-------------|
| 54 | Diphenylamine | 122-39-4 | MKCH1042 | 99% | 1,002.5 | µg/mL | +/- 36.4735 |
| 55 | Azobenzene | 103-33-3 | BCCG7339 | 98% | 1,003.5 | µg/mL | +/- 36.5106 |
| 56 | 4-Bromophenyl phenyl ether | 101-55-3 | STBH6361 | 99% | 1,005.6 | µg/mL | +/- 36.5847 |
| 57 | Hexachlorobenzene | 118-74-1 | 14257500 | 99% | 1,005.9 | µg/mL | +/- 36.5988 |
| 58 | Pentachlorophenol | 87-86-5 | RP230504 | 99% | 1,004.2 | µg/mL | +/- 36.5362 |
| 59 | Phenanthrene | 85-01-8 | MKCQ8876 | 99% | 1,004.1 | µg/mL | +/- 36.5321 |
| 60 | Anthracene | 120-12-7 | MKCR0570 | 99% | 1,008.3 | µg/mL | +/- 36.6857 |
| 61 | Carbazole | 86-74-8 | 14351100 | 99% | 1,005.1 | µg/mL | +/- 36.5665 |
| 62 | Di-n-butylphthalate | 84-74-2 | MKCN4337 | 99% | 1,006.4 | µg/mL | +/- 36.6170 |
| 63 | Fluoranthene | 206-44-0 | MKCQ4728 | 99% | 1,003.7 | µg/mL | +/- 36.5159 |
| 64 | Pyrene | 129-00-0 | BCCG7845 | 99% | 1,004.3 | µg/mL | +/- 36.5382 |
| 65 | Benzyl butyl phthalate | 85-68-7 | X12I018 | 99% | 1,003.4 | µg/mL | +/- 36.5058 |
| 66 | Bis(2-ethylhexyl)adipate | 103-23-1 | MKCM1988 | 99% | 1,003.4 | µg/mL | +/- 36.5079 |
| 67 | Benz(a)anthracene | 56-55-3 | 0012022BAA | 97% | 1,004.9 | µg/mL | +/- 36.5624 |
| 68 | Chrysene | 218-01-9 | RP230512B | 99% | 1,006.2 | µg/mL | +/- 36.6089 |
| 69 | Bis(2-ethylhexyl)phthalate | 117-81-7 | MKCQ3468 | 99% | 1,003.8 | µg/mL | +/- 36.5220 |
| 70 | Di-n-octyl phthalate | 117-84-0 | 13994100 | 99% | 1,004.2 | µg/mL | +/- 36.5341 |
| 71 | Benzo(b)fluoranthene | 205-99-2 | 012013B | 99% | 1,008.4 | µg/mL | +/- 36.6877 |
| 72 | Benzo(k)fluoranthene | 207-08-9 | 012022K | 99% | 1,004.1 | µg/mL | +/- 36.5301 |
| 73 | Benzo(a)pyrene | 50-32-8 | J6IUE | 99% | 1,006.4 | µg/mL | +/- 36.6170 |
| 74 | Indeno(1,2,3-cd)pyrene | 193-39-5 | 12-JKL-118-9 | 97% | 1,002.0 | µg/mL | +/- 36.4557 |
| 75 | Dibenz(a,h)anthracene | 53-70-3 | ER032211-01 | 99% | 1,006.1 | µg/mL | +/- 36.6029 |
| 76 | Benzo(g,h,i)perylene | 191-24-2 | RP230511B | 98% | 1,006.8 | µg/mL | +/- 36.6295 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant flow 1.8 mL/min.

Temp. Program:

80°C (hold 0.1 min.) to 330°C
@ 9.6°C/min. (hold 2.86 min.)

Inj. Temp:

250°C

Det. Temp:

340°C

Det. Type:

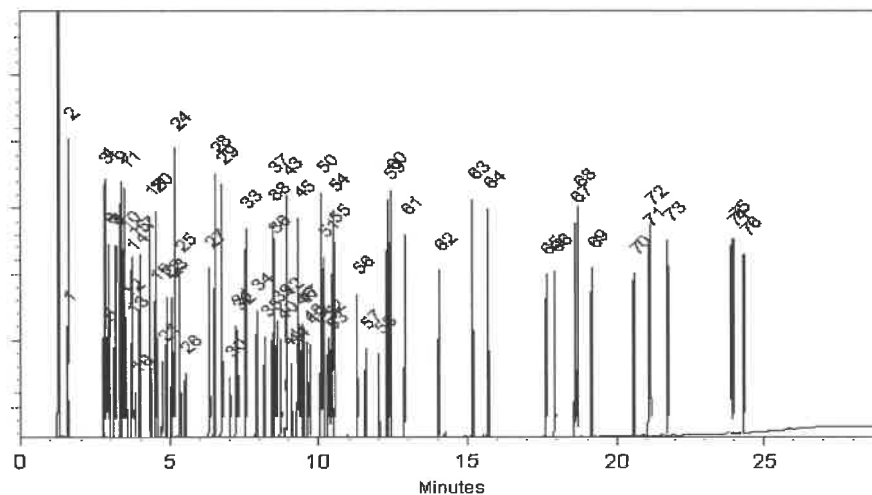
FID

Split Vent:

100 ml/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Tom Suckar - Mix Technician

Date Mixed: 11-May-2023

Balance Serial # 1128353505


Christie Mills - Operations Tech II - ARM QC

Date Passed: 18-May-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31850 **Lot No.:** A0197982
Description : 8270 MegaMix®
8270 MegaMix® 500-1,000µg/mL, Methylene Chloride, 1mL/ampul
Container Size : 2 mL **Pkg Amt:** > 1 mL
Expiration Date : November 30, 2024 **Storage:** 0°C or colder
Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

511877
↓
511906
RC/
11/30/23

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------------|----------|-----------|--------|-----------------------------|--|
| 1 | Pyridine | 110-86-1 | SHBN7324 | 99% | 1,006.9 µg/mL | +/- 36.6352 |
| 2 | N-Nitrosodimethylamine | 62-75-9 | 230209JLM | 99% | 1,007.4 µg/mL | +/- 36.6514 |
| 3 | Phenol | 108-95-2 | MKCK1120 | 99% | 1,005.3 µg/mL | +/- 36.5746 |
| 4 | Aniline | 62-53-3 | X22F726 | 99% | 1,004.6 µg/mL | +/- 36.5503 |
| 5 | Bis(2-chloroethyl)ether | 111-44-4 | SHBL6942 | 99% | 1,005.1 µg/mL | +/- 36.5665 |
| 6 | 2-Chlorophenol | 95-57-8 | STBJ3909 | 99% | 1,007.1 µg/mL | +/- 36.6392 |
| 7 | 1,3-Dichlorobenzene | 541-73-1 | BCBZ7498 | 99% | 1,006.7 µg/mL | +/- 36.6251 |
| 8 | 1,4-Dichlorobenzene | 106-46-7 | MKBS7929V | 99% | 1,005.6 µg/mL | +/- 36.5867 |
| 9 | Benzyl alcohol | 100-51-6 | SHBK5943 | 99% | 1,005.4 µg/mL | +/- 36.5786 |
| 10 | 1,2-Dichlorobenzene | 95-50-1 | SHBN3835 | 99% | 1,003.9 µg/mL | +/- 36.5240 |
| 11 | 2-Methylphenol (o-cresol) | 95-48-7 | SHBN7598 | 99% | 1,002.3 µg/mL | +/- 36.4654 |
| 12 | 2,2'-oxybis(1-chloropropane) | 108-60-1 | 230329JLM | 99% | 1,004.3 µg/mL | +/- 36.5402 |
| 13 | 3-Methylphenol (m-cresol) | 108-39-4 | STBJ0710 | 99% | 502.1 µg/mL | +/- 18.2671 |
| 14 | 4-Methylphenol (p-cresol) | 106-44-5 | SHBN3411 | 99% | 501.9 µg/mL | +/- 18.2631 |
| 15 | N-Nitroso-di-n-propylamine | 621-64-7 | N63MG | 99% | 1,004.0 µg/mL | +/- 36.5281 |
| 16 | Hexachloroethane | 67-72-1 | QTORH | 99% | 1,006.1 µg/mL | +/- 36.6029 |
| 17 | Nitrobenzene | 98-95-3 | 10224044 | 99% | 1,003.1 µg/mL | +/- 36.4957 |

| | | | | | | | | |
|----|---|-----------|-------------|-----|---------|-------|-----|---------|
| 18 | Isophorone | 78-59-1 | MKCC9506 | 99% | 1,003.8 | µg/mL | +/- | 36.5220 |
| 19 | 2-Nitrophenol | 88-75-5 | RP230509C | 99% | 1,005.8 | µg/mL | +/- | 36.5948 |
| 20 | 2,4-Dimethylphenol | 105-67-9 | XW5GK | 99% | 1,004.2 | µg/mL | +/- | 36.5341 |
| 21 | Bis(2-chloroethoxy)methane | 111-91-1 | 13670200 | 99% | 1,006.3 | µg/mL | +/- | 36.6130 |
| 22 | 2,4-Dichlorophenol | 120-83-2 | BCBZ6787 | 99% | 1,004.0 | µg/mL | +/- | 36.5281 |
| 23 | 1,2,4-Trichlorobenzene | 120-82-1 | SHBM0526 | 99% | 1,007.1 | µg/mL | +/- | 36.6413 |
| 24 | Naphthalene | 91-20-3 | MKCH0219 | 99% | 1,006.7 | µg/mL | +/- | 36.6271 |
| 25 | 4-Chloroaniline | 106-47-8 | WXBC4601V | 99% | 1,005.4 | µg/mL | +/- | 36.5806 |
| 26 | Hexachlorobutadiene | 87-68-3 | X05J | 99% | 1,006.4 | µg/mL | +/- | 36.6170 |
| 27 | 4-Chloro-3-methylphenol | 59-50-7 | BCCD4461 | 99% | 1,004.7 | µg/mL | +/- | 36.5543 |
| 28 | 2-Methylnaphthalene | 91-57-6 | STBK0259 | 96% | 1,002.3 | µg/mL | +/- | 36.4679 |
| 29 | 1-Methylnaphthalene | 90-12-0 | 5234.00-3 | 99% | 1,000.0 | µg/mL | +/- | 36.3825 |
| 30 | Hexachlorocyclopentadiene | 77-47-4 | 0012019 | 99% | 1,006.1 | µg/mL | +/- | 36.6049 |
| 31 | 2,4,6-Trichlorophenol | 88-06-2 | STBJ5914 | 99% | 1,004.9 | µg/mL | +/- | 36.5604 |
| 32 | 2,4,5-Trichlorophenol | 95-95-4 | FHN01 | 98% | 1,006.5 | µg/mL | +/- | 36.6176 |
| 33 | 2-Chloronaphthalene | 91-58-7 | RPN70 | 99% | 1,004.4 | µg/mL | +/- | 36.5422 |
| 34 | 2-Nitroaniline | 88-74-4 | RP230509A | 99% | 1,002.3 | µg/mL | +/- | 36.4654 |
| 35 | 1,4-Dinitrobenzene | 100-25-4 | RP230512A | 99% | 1,001.5 | µg/mL | +/- | 36.4371 |
| 36 | Acenaphthylene | 208-96-8 | L10L | 95% | 1,003.4 | µg/mL | +/- | 36.5066 |
| 37 | 1,3-Dinitrobenzene | 99-65-0 | 1-DXX-24-1 | 99% | 1,004.8 | µg/mL | +/- | 36.5564 |
| 38 | Dimethylphthalate | 131-11-3 | 10117699 | 99% | 1,004.7 | µg/mL | +/- | 36.5543 |
| 39 | 2,6-Dinitrotoluene | 606-20-2 | BCCG1833 | 99% | 1,006.8 | µg/mL | +/- | 36.6312 |
| 40 | 1,2-Dinitrobenzene | 528-29-0 | RP230428 | 99% | 1,006.4 | µg/mL | +/- | 36.6170 |
| 41 | Acenaphthene | 83-32-9 | MKCR7169 | 99% | 1,000.0 | µg/mL | +/- | 36.3825 |
| 42 | 3-Nitroaniline | 99-09-2 | MKCH5457 | 99% | 1,004.8 | µg/mL | +/- | 36.5584 |
| 43 | 2,4-Dinitrophenol | 51-28-5 | DR230417RSR | 99% | 1,005.8 | µg/mL | +/- | 36.5948 |
| 44 | Dibenzofuran | 132-64-9 | MKCN1772 | 99% | 1,004.3 | µg/mL | +/- | 36.5402 |
| 45 | 2,4-Dinitrotoluene | 121-14-2 | MKAA0690V | 99% | 1,005.8 | µg/mL | +/- | 36.5928 |
| 46 | 4-Nitrophenol | 100-02-7 | RP230511A | 99% | 1,005.8 | µg/mL | +/- | 36.5948 |
| 47 | 2,3,4,6-Tetrachlorophenol | 58-90-2 | PR-30126 | 99% | 1,005.9 | µg/mL | +/- | 36.5988 |
| 48 | 2,3,5,6-Tetrachlorophenol | 935-95-5 | RP230513 | 99% | 1,004.9 | µg/mL | +/- | 36.5624 |
| 49 | Fluorene | 86-73-7 | 10236068 | 99% | 1,005.4 | µg/mL | +/- | 36.5806 |
| 50 | 4-Chlorophenyl phenyl ether | 7005-72-3 | MKCQ0984 | 99% | 1,004.3 | µg/mL | +/- | 36.5382 |
| 51 | Diethylphthalate | 84-66-2 | BCCD3396 | 99% | 1,007.1 | µg/mL | +/- | 36.6392 |
| 52 | 4-Nitroaniline | 100-01-6 | RP220906 | 99% | 1,005.3 | µg/mL | +/- | 36.5766 |
| 53 | 4,6-Dinitro-2-methylphenol (Dinitro-o-cresol) | 534-52-1 | 230505JLM | 99% | 1,003.8 | µg/mL | +/- | 36.5200 |

| | | | | | | | |
|----|----------------------------|----------|--------------|-----|---------|-------|-------------|
| 54 | Diphenylamine | 122-39-4 | MKCH1042 | 99% | 1,002.5 | µg/mL | +/- 36.4735 |
| 55 | Azobenzene | 103-33-3 | BCCG7339 | 98% | 1,003.5 | µg/mL | +/- 36.5106 |
| 56 | 4-Bromophenyl phenyl ether | 101-55-3 | STBH6361 | 99% | 1,005.6 | µg/mL | +/- 36.5847 |
| 57 | Hexachlorobenzene | 118-74-1 | 14257500 | 99% | 1,005.9 | µg/mL | +/- 36.5988 |
| 58 | Pentachlorophenol | 87-86-5 | RP230504 | 99% | 1,004.2 | µg/mL | +/- 36.5362 |
| 59 | Phenanthrene | 85-01-8 | MKCQ8876 | 99% | 1,004.1 | µg/mL | +/- 36.5321 |
| 60 | Anthracene | 120-12-7 | MKCR0570 | 99% | 1,008.3 | µg/mL | +/- 36.6857 |
| 61 | Carbazole | 86-74-8 | 14351100 | 99% | 1,005.1 | µg/mL | +/- 36.5665 |
| 62 | Di-n-butylphthalate | 84-74-2 | MKCN4337 | 99% | 1,006.4 | µg/mL | +/- 36.6170 |
| 63 | Fluoranthene | 206-44-0 | MKCQ4728 | 99% | 1,003.7 | µg/mL | +/- 36.5159 |
| 64 | Pyrene | 129-00-0 | BCCG7845 | 99% | 1,004.3 | µg/mL | +/- 36.5382 |
| 65 | Benzyl butyl phthalate | 85-68-7 | X12I018 | 99% | 1,003.4 | µg/mL | +/- 36.5058 |
| 66 | Bis(2-ethylhexyl)adipate | 103-23-1 | MKCM1988 | 99% | 1,003.4 | µg/mL | +/- 36.5079 |
| 67 | Benz(a)anthracene | 56-55-3 | 0012022BAA | 97% | 1,004.9 | µg/mL | +/- 36.5624 |
| 68 | Chrysene | 218-01-9 | RP230512B | 99% | 1,006.2 | µg/mL | +/- 36.6089 |
| 69 | Bis(2-ethylhexyl)phthalate | 117-81-7 | MKCQ3468 | 99% | 1,003.8 | µg/mL | +/- 36.5220 |
| 70 | Di-n-octyl phthalate | 117-84-0 | 13994100 | 99% | 1,004.2 | µg/mL | +/- 36.5341 |
| 71 | Benzo(b)fluoranthene | 205-99-2 | 012013B | 99% | 1,008.4 | µg/mL | +/- 36.6877 |
| 72 | Benzo(k)fluoranthene | 207-08-9 | 012022K | 99% | 1,004.1 | µg/mL | +/- 36.5301 |
| 73 | Benzo(a)pyrene | 50-32-8 | J6IUE | 99% | 1,006.4 | µg/mL | +/- 36.6170 |
| 74 | Indeno(1,2,3-cd)pyrene | 193-39-5 | 12-JKL-118-9 | 97% | 1,002.0 | µg/mL | +/- 36.4557 |
| 75 | Dibenz(a,h)anthracene | 53-70-3 | ER032211-01 | 99% | 1,006.1 | µg/mL | +/- 36.6029 |
| 76 | Benzo(g,h,i)perylene | 191-24-2 | RP230511B | 98% | 1,006.8 | µg/mL | +/- 36.6295 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant flow 1.8 mL/min.

Temp. Program:

80°C (hold 0.1 min.) to 330°C
@ 9.6°C/min. (hold 2.86 min.)

Inj. Temp:

250°C

Det. Temp:

340°C

Det. Type:

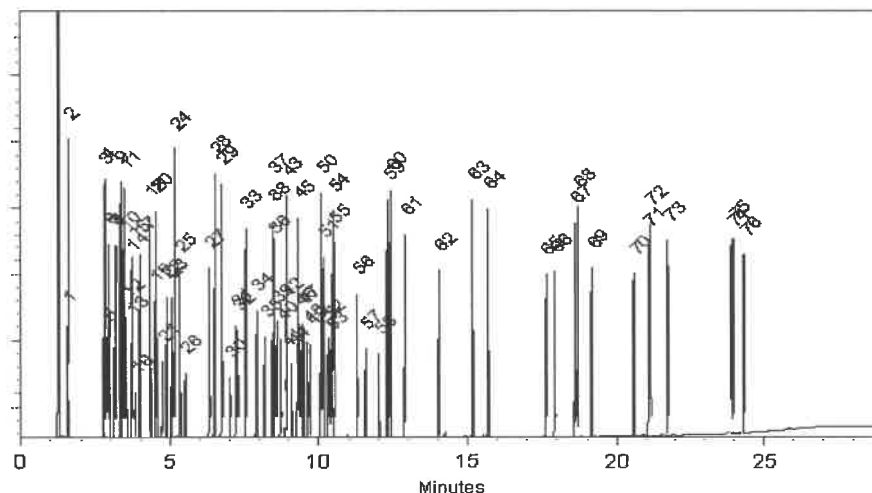
FID

Split Vent:

100 ml/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Tom Suckar - Mix Technician

Date Mixed: 11-May-2023

Balance Serial # 1128353505


Christie Mills - Operations Tech II - ARM QC

Date Passed: 18-May-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31850 **Lot No.:** A0197982

Description : 8270 MegaMix®
8270 MegaMix® 500-1,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : November 30, 2024 **Storage:** 0°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

511877
↓
511906

RC/
11/30/23

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------------|----------|-----------|--------|-----------------------------|--|
| 1 | Pyridine | 110-86-1 | SHBN7324 | 99% | 1,006.9 µg/mL | +/- 36.6352 |
| 2 | N-Nitrosodimethylamine | 62-75-9 | 230209JLM | 99% | 1,007.4 µg/mL | +/- 36.6514 |
| 3 | Phenol | 108-95-2 | MKCK1120 | 99% | 1,005.3 µg/mL | +/- 36.5746 |
| 4 | Aniline | 62-53-3 | X22F726 | 99% | 1,004.6 µg/mL | +/- 36.5503 |
| 5 | Bis(2-chloroethyl)ether | 111-44-4 | SHBL6942 | 99% | 1,005.1 µg/mL | +/- 36.5665 |
| 6 | 2-Chlorophenol | 95-57-8 | STBJ3909 | 99% | 1,007.1 µg/mL | +/- 36.6392 |
| 7 | 1,3-Dichlorobenzene | 541-73-1 | BCBZ7498 | 99% | 1,006.7 µg/mL | +/- 36.6251 |
| 8 | 1,4-Dichlorobenzene | 106-46-7 | MKBS7929V | 99% | 1,005.6 µg/mL | +/- 36.5867 |
| 9 | Benzyl alcohol | 100-51-6 | SHBK5943 | 99% | 1,005.4 µg/mL | +/- 36.5786 |
| 10 | 1,2-Dichlorobenzene | 95-50-1 | SHBN3835 | 99% | 1,003.9 µg/mL | +/- 36.5240 |
| 11 | 2-Methylphenol (o-cresol) | 95-48-7 | SHBN7598 | 99% | 1,002.3 µg/mL | +/- 36.4654 |
| 12 | 2,2'-oxybis(1-chloropropane) | 108-60-1 | 230329JLM | 99% | 1,004.3 µg/mL | +/- 36.5402 |
| 13 | 3-Methylphenol (m-cresol) | 108-39-4 | STBJ0710 | 99% | 502.1 µg/mL | +/- 18.2671 |
| 14 | 4-Methylphenol (p-cresol) | 106-44-5 | SHBN3411 | 99% | 501.9 µg/mL | +/- 18.2631 |
| 15 | N-Nitroso-di-n-propylamine | 621-64-7 | N63MG | 99% | 1,004.0 µg/mL | +/- 36.5281 |
| 16 | Hexachloroethane | 67-72-1 | QTORH | 99% | 1,006.1 µg/mL | +/- 36.6029 |
| 17 | Nitrobenzene | 98-95-3 | 10224044 | 99% | 1,003.1 µg/mL | +/- 36.4957 |

| | | | | | | | |
|----|---|-----------|-------------|-----|---------|-------|-------------|
| 18 | Isophorone | 78-59-1 | MKCC9506 | 99% | 1,003.8 | µg/mL | +/- 36.5220 |
| 19 | 2-Nitrophenol | 88-75-5 | RP230509C | 99% | 1,005.8 | µg/mL | +/- 36.5948 |
| 20 | 2,4-Dimethylphenol | 105-67-9 | XW5GK | 99% | 1,004.2 | µg/mL | +/- 36.5341 |
| 21 | Bis(2-chloroethoxy)methane | 111-91-1 | 13670200 | 99% | 1,006.3 | µg/mL | +/- 36.6130 |
| 22 | 2,4-Dichlorophenol | 120-83-2 | BCBZ6787 | 99% | 1,004.0 | µg/mL | +/- 36.5281 |
| 23 | 1,2,4-Trichlorobenzene | 120-82-1 | SHBM0526 | 99% | 1,007.1 | µg/mL | +/- 36.6413 |
| 24 | Naphthalene | 91-20-3 | MKCH0219 | 99% | 1,006.7 | µg/mL | +/- 36.6271 |
| 25 | 4-Chloroaniline | 106-47-8 | WXBC4601V | 99% | 1,005.4 | µg/mL | +/- 36.5806 |
| 26 | Hexachlorobutadiene | 87-68-3 | X05J | 99% | 1,006.4 | µg/mL | +/- 36.6170 |
| 27 | 4-Chloro-3-methylphenol | 59-50-7 | BCCD4461 | 99% | 1,004.7 | µg/mL | +/- 36.5543 |
| 28 | 2-Methylnaphthalene | 91-57-6 | STBK0259 | 96% | 1,002.3 | µg/mL | +/- 36.4679 |
| 29 | 1-Methylnaphthalene | 90-12-0 | 5234.00-3 | 99% | 1,000.0 | µg/mL | +/- 36.3825 |
| 30 | Hexachlorocyclopentadiene | 77-47-4 | 0012019 | 99% | 1,006.1 | µg/mL | +/- 36.6049 |
| 31 | 2,4,6-Trichlorophenol | 88-06-2 | STBJ5914 | 99% | 1,004.9 | µg/mL | +/- 36.5604 |
| 32 | 2,4,5-Trichlorophenol | 95-95-4 | FHN01 | 98% | 1,006.5 | µg/mL | +/- 36.6176 |
| 33 | 2-Chloronaphthalene | 91-58-7 | RPN70 | 99% | 1,004.4 | µg/mL | +/- 36.5422 |
| 34 | 2-Nitroaniline | 88-74-4 | RP230509A | 99% | 1,002.3 | µg/mL | +/- 36.4654 |
| 35 | 1,4-Dinitrobenzene | 100-25-4 | RP230512A | 99% | 1,001.5 | µg/mL | +/- 36.4371 |
| 36 | Acenaphthylene | 208-96-8 | L10L | 95% | 1,003.4 | µg/mL | +/- 36.5066 |
| 37 | 1,3-Dinitrobenzene | 99-65-0 | 1-DXX-24-1 | 99% | 1,004.8 | µg/mL | +/- 36.5564 |
| 38 | Dimethylphthalate | 131-11-3 | 10117699 | 99% | 1,004.7 | µg/mL | +/- 36.5543 |
| 39 | 2,6-Dinitrotoluene | 606-20-2 | BCCG1833 | 99% | 1,006.8 | µg/mL | +/- 36.6312 |
| 40 | 1,2-Dinitrobenzene | 528-29-0 | RP230428 | 99% | 1,006.4 | µg/mL | +/- 36.6170 |
| 41 | Acenaphthene | 83-32-9 | MKCR7169 | 99% | 1,000.0 | µg/mL | +/- 36.3825 |
| 42 | 3-Nitroaniline | 99-09-2 | MKCH5457 | 99% | 1,004.8 | µg/mL | +/- 36.5584 |
| 43 | 2,4-Dinitrophenol | 51-28-5 | DR230417RSR | 99% | 1,005.8 | µg/mL | +/- 36.5948 |
| 44 | Dibenzofuran | 132-64-9 | MKCN1772 | 99% | 1,004.3 | µg/mL | +/- 36.5402 |
| 45 | 2,4-Dinitrotoluene | 121-14-2 | MKAA0690V | 99% | 1,005.8 | µg/mL | +/- 36.5928 |
| 46 | 4-Nitrophenol | 100-02-7 | RP230511A | 99% | 1,005.8 | µg/mL | +/- 36.5948 |
| 47 | 2,3,4,6-Tetrachlorophenol | 58-90-2 | PR-30126 | 99% | 1,005.9 | µg/mL | +/- 36.5988 |
| 48 | 2,3,5,6-Tetrachlorophenol | 935-95-5 | RP230513 | 99% | 1,004.9 | µg/mL | +/- 36.5624 |
| 49 | Fluorene | 86-73-7 | 10236068 | 99% | 1,005.4 | µg/mL | +/- 36.5806 |
| 50 | 4-Chlorophenyl phenyl ether | 7005-72-3 | MKCQ0984 | 99% | 1,004.3 | µg/mL | +/- 36.5382 |
| 51 | Diethylphthalate | 84-66-2 | BCCD3396 | 99% | 1,007.1 | µg/mL | +/- 36.6392 |
| 52 | 4-Nitroaniline | 100-01-6 | RP220906 | 99% | 1,005.3 | µg/mL | +/- 36.5766 |
| 53 | 4,6-Dinitro-2-methylphenol (Dinitro-o-cresol) | 534-52-1 | 230505JLM | 99% | 1,003.8 | µg/mL | +/- 36.5200 |

| | | | | | | | |
|----|----------------------------|----------|--------------|-----|---------|-------|-------------|
| 54 | Diphenylamine | 122-39-4 | MKCH1042 | 99% | 1,002.5 | µg/mL | +/- 36.4735 |
| 55 | Azobenzene | 103-33-3 | BCCG7339 | 98% | 1,003.5 | µg/mL | +/- 36.5106 |
| 56 | 4-Bromophenyl phenyl ether | 101-55-3 | STBH6361 | 99% | 1,005.6 | µg/mL | +/- 36.5847 |
| 57 | Hexachlorobenzene | 118-74-1 | 14257500 | 99% | 1,005.9 | µg/mL | +/- 36.5988 |
| 58 | Pentachlorophenol | 87-86-5 | RP230504 | 99% | 1,004.2 | µg/mL | +/- 36.5362 |
| 59 | Phenanthrene | 85-01-8 | MKCQ8876 | 99% | 1,004.1 | µg/mL | +/- 36.5321 |
| 60 | Anthracene | 120-12-7 | MKCR0570 | 99% | 1,008.3 | µg/mL | +/- 36.6857 |
| 61 | Carbazole | 86-74-8 | 14351100 | 99% | 1,005.1 | µg/mL | +/- 36.5665 |
| 62 | Di-n-butylphthalate | 84-74-2 | MKCN4337 | 99% | 1,006.4 | µg/mL | +/- 36.6170 |
| 63 | Fluoranthene | 206-44-0 | MKCQ4728 | 99% | 1,003.7 | µg/mL | +/- 36.5159 |
| 64 | Pyrene | 129-00-0 | BCCG7845 | 99% | 1,004.3 | µg/mL | +/- 36.5382 |
| 65 | Benzyl butyl phthalate | 85-68-7 | X12I018 | 99% | 1,003.4 | µg/mL | +/- 36.5058 |
| 66 | Bis(2-ethylhexyl)adipate | 103-23-1 | MKCM1988 | 99% | 1,003.4 | µg/mL | +/- 36.5079 |
| 67 | Benz(a)anthracene | 56-55-3 | 0012022BAA | 97% | 1,004.9 | µg/mL | +/- 36.5624 |
| 68 | Chrysene | 218-01-9 | RP230512B | 99% | 1,006.2 | µg/mL | +/- 36.6089 |
| 69 | Bis(2-ethylhexyl)phthalate | 117-81-7 | MKCQ3468 | 99% | 1,003.8 | µg/mL | +/- 36.5220 |
| 70 | Di-n-octyl phthalate | 117-84-0 | 13994100 | 99% | 1,004.2 | µg/mL | +/- 36.5341 |
| 71 | Benzo(b)fluoranthene | 205-99-2 | 012013B | 99% | 1,008.4 | µg/mL | +/- 36.6877 |
| 72 | Benzo(k)fluoranthene | 207-08-9 | 012022K | 99% | 1,004.1 | µg/mL | +/- 36.5301 |
| 73 | Benzo(a)pyrene | 50-32-8 | J6IUE | 99% | 1,006.4 | µg/mL | +/- 36.6170 |
| 74 | Indeno(1,2,3-cd)pyrene | 193-39-5 | 12-JKL-118-9 | 97% | 1,002.0 | µg/mL | +/- 36.4557 |
| 75 | Dibenz(a,h)anthracene | 53-70-3 | ER032211-01 | 99% | 1,006.1 | µg/mL | +/- 36.6029 |
| 76 | Benzo(g,h,i)perylene | 191-24-2 | RP230511B | 98% | 1,006.8 | µg/mL | +/- 36.6295 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant flow 1.8 mL/min.

Temp. Program:

80°C (hold 0.1 min.) to 330°C
@ 9.6°C/min. (hold 2.86 min.)

Inj. Temp:

250°C

Det. Temp:

340°C

Det. Type:

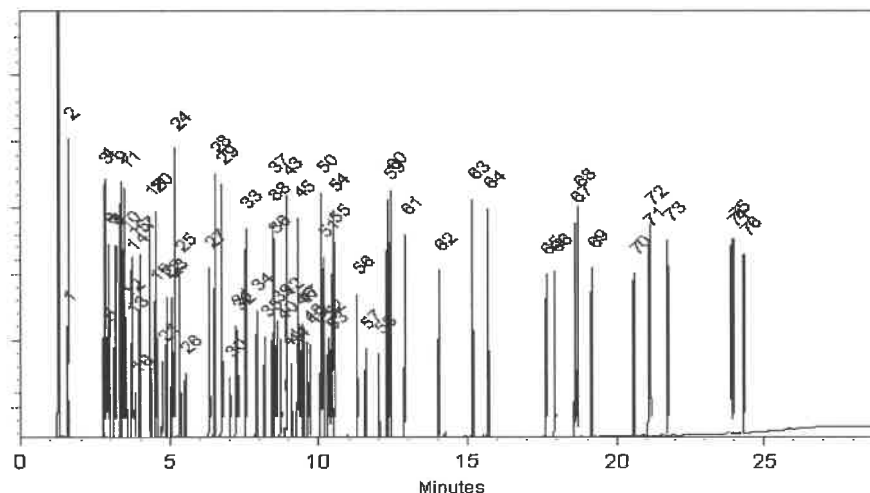
FID

Split Vent:

100 ml/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Tom Suckar - Mix Technician

Date Mixed: 11-May-2023

Balance Serial # 1128353505


Christie Mills - Operations Tech II - ARM QC

Date Passed: 18-May-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31850 **Lot No.:** A0197982

Description : 8270 MegaMix®
8270 MegaMix® 500-1,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : November 30, 2024 **Storage:** 0°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

511877
↓
511906

RC/
11/30/23

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------------|----------|-----------|--------|-----------------------------|--|
| 1 | Pyridine | 110-86-1 | SHBN7324 | 99% | 1,006.9 µg/mL | +/- 36.6352 |
| 2 | N-Nitrosodimethylamine | 62-75-9 | 230209JLM | 99% | 1,007.4 µg/mL | +/- 36.6514 |
| 3 | Phenol | 108-95-2 | MKCK1120 | 99% | 1,005.3 µg/mL | +/- 36.5746 |
| 4 | Aniline | 62-53-3 | X22F726 | 99% | 1,004.6 µg/mL | +/- 36.5503 |
| 5 | Bis(2-chloroethyl)ether | 111-44-4 | SHBL6942 | 99% | 1,005.1 µg/mL | +/- 36.5665 |
| 6 | 2-Chlorophenol | 95-57-8 | STBJ3909 | 99% | 1,007.1 µg/mL | +/- 36.6392 |
| 7 | 1,3-Dichlorobenzene | 541-73-1 | BCBZ7498 | 99% | 1,006.7 µg/mL | +/- 36.6251 |
| 8 | 1,4-Dichlorobenzene | 106-46-7 | MKBS7929V | 99% | 1,005.6 µg/mL | +/- 36.5867 |
| 9 | Benzyl alcohol | 100-51-6 | SHBK5943 | 99% | 1,005.4 µg/mL | +/- 36.5786 |
| 10 | 1,2-Dichlorobenzene | 95-50-1 | SHBN3835 | 99% | 1,003.9 µg/mL | +/- 36.5240 |
| 11 | 2-Methylphenol (o-cresol) | 95-48-7 | SHBN7598 | 99% | 1,002.3 µg/mL | +/- 36.4654 |
| 12 | 2,2'-oxybis(1-chloropropane) | 108-60-1 | 230329JLM | 99% | 1,004.3 µg/mL | +/- 36.5402 |
| 13 | 3-Methylphenol (m-cresol) | 108-39-4 | STBJ0710 | 99% | 502.1 µg/mL | +/- 18.2671 |
| 14 | 4-Methylphenol (p-cresol) | 106-44-5 | SHBN3411 | 99% | 501.9 µg/mL | +/- 18.2631 |
| 15 | N-Nitroso-di-n-propylamine | 621-64-7 | N63MG | 99% | 1,004.0 µg/mL | +/- 36.5281 |
| 16 | Hexachloroethane | 67-72-1 | QTORH | 99% | 1,006.1 µg/mL | +/- 36.6029 |
| 17 | Nitrobenzene | 98-95-3 | 10224044 | 99% | 1,003.1 µg/mL | +/- 36.4957 |

| | | | | | | | | |
|----|---|-----------|-------------|-----|---------|-------|-----|---------|
| 18 | Isophorone | 78-59-1 | MKCC9506 | 99% | 1,003.8 | µg/mL | +/- | 36.5220 |
| 19 | 2-Nitrophenol | 88-75-5 | RP230509C | 99% | 1,005.8 | µg/mL | +/- | 36.5948 |
| 20 | 2,4-Dimethylphenol | 105-67-9 | XW5GK | 99% | 1,004.2 | µg/mL | +/- | 36.5341 |
| 21 | Bis(2-chloroethoxy)methane | 111-91-1 | 13670200 | 99% | 1,006.3 | µg/mL | +/- | 36.6130 |
| 22 | 2,4-Dichlorophenol | 120-83-2 | BCBZ6787 | 99% | 1,004.0 | µg/mL | +/- | 36.5281 |
| 23 | 1,2,4-Trichlorobenzene | 120-82-1 | SHBM0526 | 99% | 1,007.1 | µg/mL | +/- | 36.6413 |
| 24 | Naphthalene | 91-20-3 | MKCH0219 | 99% | 1,006.7 | µg/mL | +/- | 36.6271 |
| 25 | 4-Chloroaniline | 106-47-8 | WXBC4601V | 99% | 1,005.4 | µg/mL | +/- | 36.5806 |
| 26 | Hexachlorobutadiene | 87-68-3 | X05J | 99% | 1,006.4 | µg/mL | +/- | 36.6170 |
| 27 | 4-Chloro-3-methylphenol | 59-50-7 | BCCD4461 | 99% | 1,004.7 | µg/mL | +/- | 36.5543 |
| 28 | 2-Methylnaphthalene | 91-57-6 | STBK0259 | 96% | 1,002.3 | µg/mL | +/- | 36.4679 |
| 29 | 1-Methylnaphthalene | 90-12-0 | 5234.00-3 | 99% | 1,000.0 | µg/mL | +/- | 36.3825 |
| 30 | Hexachlorocyclopentadiene | 77-47-4 | 0012019 | 99% | 1,006.1 | µg/mL | +/- | 36.6049 |
| 31 | 2,4,6-Trichlorophenol | 88-06-2 | STBJ5914 | 99% | 1,004.9 | µg/mL | +/- | 36.5604 |
| 32 | 2,4,5-Trichlorophenol | 95-95-4 | FHN01 | 98% | 1,006.5 | µg/mL | +/- | 36.6176 |
| 33 | 2-Chloronaphthalene | 91-58-7 | RPN70 | 99% | 1,004.4 | µg/mL | +/- | 36.5422 |
| 34 | 2-Nitroaniline | 88-74-4 | RP230509A | 99% | 1,002.3 | µg/mL | +/- | 36.4654 |
| 35 | 1,4-Dinitrobenzene | 100-25-4 | RP230512A | 99% | 1,001.5 | µg/mL | +/- | 36.4371 |
| 36 | Acenaphthylene | 208-96-8 | L10L | 95% | 1,003.4 | µg/mL | +/- | 36.5066 |
| 37 | 1,3-Dinitrobenzene | 99-65-0 | 1-DXX-24-1 | 99% | 1,004.8 | µg/mL | +/- | 36.5564 |
| 38 | Dimethylphthalate | 131-11-3 | 10117699 | 99% | 1,004.7 | µg/mL | +/- | 36.5543 |
| 39 | 2,6-Dinitrotoluene | 606-20-2 | BCCG1833 | 99% | 1,006.8 | µg/mL | +/- | 36.6312 |
| 40 | 1,2-Dinitrobenzene | 528-29-0 | RP230428 | 99% | 1,006.4 | µg/mL | +/- | 36.6170 |
| 41 | Acenaphthene | 83-32-9 | MKCR7169 | 99% | 1,000.0 | µg/mL | +/- | 36.3825 |
| 42 | 3-Nitroaniline | 99-09-2 | MKCH5457 | 99% | 1,004.8 | µg/mL | +/- | 36.5584 |
| 43 | 2,4-Dinitrophenol | 51-28-5 | DR230417RSR | 99% | 1,005.8 | µg/mL | +/- | 36.5948 |
| 44 | Dibenzofuran | 132-64-9 | MKCN1772 | 99% | 1,004.3 | µg/mL | +/- | 36.5402 |
| 45 | 2,4-Dinitrotoluene | 121-14-2 | MKAA0690V | 99% | 1,005.8 | µg/mL | +/- | 36.5928 |
| 46 | 4-Nitrophenol | 100-02-7 | RP230511A | 99% | 1,005.8 | µg/mL | +/- | 36.5948 |
| 47 | 2,3,4,6-Tetrachlorophenol | 58-90-2 | PR-30126 | 99% | 1,005.9 | µg/mL | +/- | 36.5988 |
| 48 | 2,3,5,6-Tetrachlorophenol | 935-95-5 | RP230513 | 99% | 1,004.9 | µg/mL | +/- | 36.5624 |
| 49 | Fluorene | 86-73-7 | 10236068 | 99% | 1,005.4 | µg/mL | +/- | 36.5806 |
| 50 | 4-Chlorophenyl phenyl ether | 7005-72-3 | MKCQ0984 | 99% | 1,004.3 | µg/mL | +/- | 36.5382 |
| 51 | Diethylphthalate | 84-66-2 | BCCD3396 | 99% | 1,007.1 | µg/mL | +/- | 36.6392 |
| 52 | 4-Nitroaniline | 100-01-6 | RP220906 | 99% | 1,005.3 | µg/mL | +/- | 36.5766 |
| 53 | 4,6-Dinitro-2-methylphenol (Dinitro-o-cresol) | 534-52-1 | 230505JLM | 99% | 1,003.8 | µg/mL | +/- | 36.5200 |

| | | | | | | | |
|----|----------------------------|----------|--------------|-----|---------|-------|-------------|
| 54 | Diphenylamine | 122-39-4 | MKCH1042 | 99% | 1,002.5 | µg/mL | +/- 36.4735 |
| 55 | Azobenzene | 103-33-3 | BCCG7339 | 98% | 1,003.5 | µg/mL | +/- 36.5106 |
| 56 | 4-Bromophenyl phenyl ether | 101-55-3 | STBH6361 | 99% | 1,005.6 | µg/mL | +/- 36.5847 |
| 57 | Hexachlorobenzene | 118-74-1 | 14257500 | 99% | 1,005.9 | µg/mL | +/- 36.5988 |
| 58 | Pentachlorophenol | 87-86-5 | RP230504 | 99% | 1,004.2 | µg/mL | +/- 36.5362 |
| 59 | Phenanthrene | 85-01-8 | MKCQ8876 | 99% | 1,004.1 | µg/mL | +/- 36.5321 |
| 60 | Anthracene | 120-12-7 | MKCR0570 | 99% | 1,008.3 | µg/mL | +/- 36.6857 |
| 61 | Carbazole | 86-74-8 | 14351100 | 99% | 1,005.1 | µg/mL | +/- 36.5665 |
| 62 | Di-n-butylphthalate | 84-74-2 | MKCN4337 | 99% | 1,006.4 | µg/mL | +/- 36.6170 |
| 63 | Fluoranthene | 206-44-0 | MKCQ4728 | 99% | 1,003.7 | µg/mL | +/- 36.5159 |
| 64 | Pyrene | 129-00-0 | BCCG7845 | 99% | 1,004.3 | µg/mL | +/- 36.5382 |
| 65 | Benzyl butyl phthalate | 85-68-7 | X12I018 | 99% | 1,003.4 | µg/mL | +/- 36.5058 |
| 66 | Bis(2-ethylhexyl)adipate | 103-23-1 | MKCM1988 | 99% | 1,003.4 | µg/mL | +/- 36.5079 |
| 67 | Benz(a)anthracene | 56-55-3 | 0012022BAA | 97% | 1,004.9 | µg/mL | +/- 36.5624 |
| 68 | Chrysene | 218-01-9 | RP230512B | 99% | 1,006.2 | µg/mL | +/- 36.6089 |
| 69 | Bis(2-ethylhexyl)phthalate | 117-81-7 | MKCQ3468 | 99% | 1,003.8 | µg/mL | +/- 36.5220 |
| 70 | Di-n-octyl phthalate | 117-84-0 | 13994100 | 99% | 1,004.2 | µg/mL | +/- 36.5341 |
| 71 | Benzo(b)fluoranthene | 205-99-2 | 012013B | 99% | 1,008.4 | µg/mL | +/- 36.6877 |
| 72 | Benzo(k)fluoranthene | 207-08-9 | 012022K | 99% | 1,004.1 | µg/mL | +/- 36.5301 |
| 73 | Benzo(a)pyrene | 50-32-8 | J6IUE | 99% | 1,006.4 | µg/mL | +/- 36.6170 |
| 74 | Indeno(1,2,3-cd)pyrene | 193-39-5 | 12-JKL-118-9 | 97% | 1,002.0 | µg/mL | +/- 36.4557 |
| 75 | Dibenz(a,h)anthracene | 53-70-3 | ER032211-01 | 99% | 1,006.1 | µg/mL | +/- 36.6029 |
| 76 | Benzo(g,h,i)perylene | 191-24-2 | RP230511B | 98% | 1,006.8 | µg/mL | +/- 36.6295 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant flow 1.8 mL/min.

Temp. Program:

80°C (hold 0.1 min.) to 330°C
@ 9.6°C/min. (hold 2.86 min.)

Inj. Temp:

250°C

Det. Temp:

340°C

Det. Type:

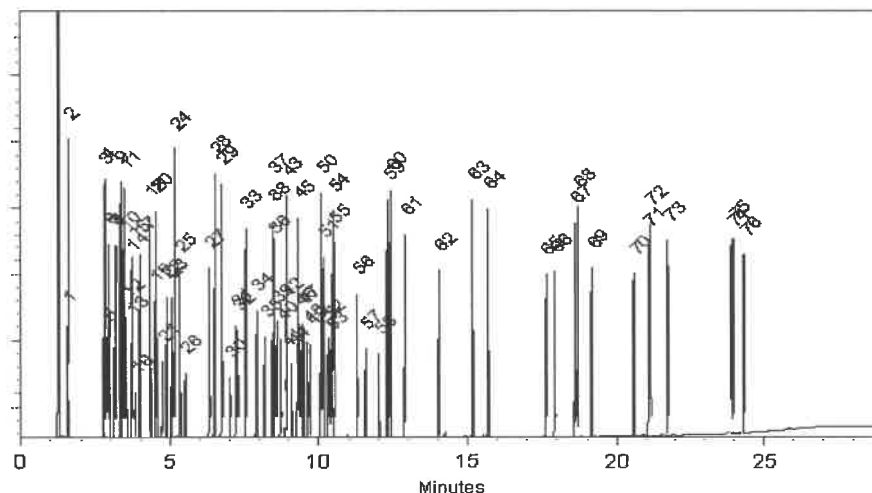
FID

Split Vent:

100 ml/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Tom Suckar - Mix Technician

Date Mixed: 11-May-2023

Balance Serial # 1128353505


Christie Mills - Operations Tech II - ARM QC

Date Passed: 18-May-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31850 **Lot No.:** A0197982

Description : 8270 MegaMix®
8270 MegaMix® 500-1,000µg/mL, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : November 30, 2024 **Storage:** 0°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

511877
↓
511906

RC/
11/30/23

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------------|----------|-----------|--------|-----------------------------|--|
| 1 | Pyridine | 110-86-1 | SHBN7324 | 99% | 1,006.9 µg/mL | +/- 36.6352 |
| 2 | N-Nitrosodimethylamine | 62-75-9 | 230209JLM | 99% | 1,007.4 µg/mL | +/- 36.6514 |
| 3 | Phenol | 108-95-2 | MKCK1120 | 99% | 1,005.3 µg/mL | +/- 36.5746 |
| 4 | Aniline | 62-53-3 | X22F726 | 99% | 1,004.6 µg/mL | +/- 36.5503 |
| 5 | Bis(2-chloroethyl)ether | 111-44-4 | SHBL6942 | 99% | 1,005.1 µg/mL | +/- 36.5665 |
| 6 | 2-Chlorophenol | 95-57-8 | STBJ3909 | 99% | 1,007.1 µg/mL | +/- 36.6392 |
| 7 | 1,3-Dichlorobenzene | 541-73-1 | BCBZ7498 | 99% | 1,006.7 µg/mL | +/- 36.6251 |
| 8 | 1,4-Dichlorobenzene | 106-46-7 | MKBS7929V | 99% | 1,005.6 µg/mL | +/- 36.5867 |
| 9 | Benzyl alcohol | 100-51-6 | SHBK5943 | 99% | 1,005.4 µg/mL | +/- 36.5786 |
| 10 | 1,2-Dichlorobenzene | 95-50-1 | SHBN3835 | 99% | 1,003.9 µg/mL | +/- 36.5240 |
| 11 | 2-Methylphenol (o-cresol) | 95-48-7 | SHBN7598 | 99% | 1,002.3 µg/mL | +/- 36.4654 |
| 12 | 2,2'-oxybis(1-chloropropane) | 108-60-1 | 230329JLM | 99% | 1,004.3 µg/mL | +/- 36.5402 |
| 13 | 3-Methylphenol (m-cresol) | 108-39-4 | STBJ0710 | 99% | 502.1 µg/mL | +/- 18.2671 |
| 14 | 4-Methylphenol (p-cresol) | 106-44-5 | SHBN3411 | 99% | 501.9 µg/mL | +/- 18.2631 |
| 15 | N-Nitroso-di-n-propylamine | 621-64-7 | N63MG | 99% | 1,004.0 µg/mL | +/- 36.5281 |
| 16 | Hexachloroethane | 67-72-1 | QTORH | 99% | 1,006.1 µg/mL | +/- 36.6029 |
| 17 | Nitrobenzene | 98-95-3 | 10224044 | 99% | 1,003.1 µg/mL | +/- 36.4957 |

| | | | | | | | | |
|----|---|-----------|-------------|-----|---------|-------|-----|---------|
| 18 | Isophorone | 78-59-1 | MKCC9506 | 99% | 1,003.8 | µg/mL | +/- | 36.5220 |
| 19 | 2-Nitrophenol | 88-75-5 | RP230509C | 99% | 1,005.8 | µg/mL | +/- | 36.5948 |
| 20 | 2,4-Dimethylphenol | 105-67-9 | XW5GK | 99% | 1,004.2 | µg/mL | +/- | 36.5341 |
| 21 | Bis(2-chloroethoxy)methane | 111-91-1 | 13670200 | 99% | 1,006.3 | µg/mL | +/- | 36.6130 |
| 22 | 2,4-Dichlorophenol | 120-83-2 | BCBZ6787 | 99% | 1,004.0 | µg/mL | +/- | 36.5281 |
| 23 | 1,2,4-Trichlorobenzene | 120-82-1 | SHBM0526 | 99% | 1,007.1 | µg/mL | +/- | 36.6413 |
| 24 | Naphthalene | 91-20-3 | MKCH0219 | 99% | 1,006.7 | µg/mL | +/- | 36.6271 |
| 25 | 4-Chloroaniline | 106-47-8 | WXBC4601V | 99% | 1,005.4 | µg/mL | +/- | 36.5806 |
| 26 | Hexachlorobutadiene | 87-68-3 | X05J | 99% | 1,006.4 | µg/mL | +/- | 36.6170 |
| 27 | 4-Chloro-3-methylphenol | 59-50-7 | BCCD4461 | 99% | 1,004.7 | µg/mL | +/- | 36.5543 |
| 28 | 2-Methylnaphthalene | 91-57-6 | STBK0259 | 96% | 1,002.3 | µg/mL | +/- | 36.4679 |
| 29 | 1-Methylnaphthalene | 90-12-0 | 5234.00-3 | 99% | 1,000.0 | µg/mL | +/- | 36.3825 |
| 30 | Hexachlorocyclopentadiene | 77-47-4 | 0012019 | 99% | 1,006.1 | µg/mL | +/- | 36.6049 |
| 31 | 2,4,6-Trichlorophenol | 88-06-2 | STBJ5914 | 99% | 1,004.9 | µg/mL | +/- | 36.5604 |
| 32 | 2,4,5-Trichlorophenol | 95-95-4 | FHN01 | 98% | 1,006.5 | µg/mL | +/- | 36.6176 |
| 33 | 2-Chloronaphthalene | 91-58-7 | RPN7O | 99% | 1,004.4 | µg/mL | +/- | 36.5422 |
| 34 | 2-Nitroaniline | 88-74-4 | RP230509A | 99% | 1,002.3 | µg/mL | +/- | 36.4654 |
| 35 | 1,4-Dinitrobenzene | 100-25-4 | RP230512A | 99% | 1,001.5 | µg/mL | +/- | 36.4371 |
| 36 | Acenaphthylene | 208-96-8 | L10L | 95% | 1,003.4 | µg/mL | +/- | 36.5066 |
| 37 | 1,3-Dinitrobenzene | 99-65-0 | 1-DXX-24-1 | 99% | 1,004.8 | µg/mL | +/- | 36.5564 |
| 38 | Dimethylphthalate | 131-11-3 | 10117699 | 99% | 1,004.7 | µg/mL | +/- | 36.5543 |
| 39 | 2,6-Dinitrotoluene | 606-20-2 | BCCG1833 | 99% | 1,006.8 | µg/mL | +/- | 36.6312 |
| 40 | 1,2-Dinitrobenzene | 528-29-0 | RP230428 | 99% | 1,006.4 | µg/mL | +/- | 36.6170 |
| 41 | Acenaphthene | 83-32-9 | MKCR7169 | 99% | 1,000.0 | µg/mL | +/- | 36.3825 |
| 42 | 3-Nitroaniline | 99-09-2 | MKCH5457 | 99% | 1,004.8 | µg/mL | +/- | 36.5584 |
| 43 | 2,4-Dinitrophenol | 51-28-5 | DR230417RSR | 99% | 1,005.8 | µg/mL | +/- | 36.5948 |
| 44 | Dibenzofuran | 132-64-9 | MKCN1772 | 99% | 1,004.3 | µg/mL | +/- | 36.5402 |
| 45 | 2,4-Dinitrotoluene | 121-14-2 | MKAA0690V | 99% | 1,005.8 | µg/mL | +/- | 36.5928 |
| 46 | 4-Nitrophenol | 100-02-7 | RP230511A | 99% | 1,005.8 | µg/mL | +/- | 36.5948 |
| 47 | 2,3,4,6-Tetrachlorophenol | 58-90-2 | PR-30126 | 99% | 1,005.9 | µg/mL | +/- | 36.5988 |
| 48 | 2,3,5,6-Tetrachlorophenol | 935-95-5 | RP230513 | 99% | 1,004.9 | µg/mL | +/- | 36.5624 |
| 49 | Fluorene | 86-73-7 | 10236068 | 99% | 1,005.4 | µg/mL | +/- | 36.5806 |
| 50 | 4-Chlorophenyl phenyl ether | 7005-72-3 | MKCQ0984 | 99% | 1,004.3 | µg/mL | +/- | 36.5382 |
| 51 | Diethylphthalate | 84-66-2 | BCCD3396 | 99% | 1,007.1 | µg/mL | +/- | 36.6392 |
| 52 | 4-Nitroaniline | 100-01-6 | RP220906 | 99% | 1,005.3 | µg/mL | +/- | 36.5766 |
| 53 | 4,6-Dinitro-2-methylphenol (Dinitro-o-cresol) | 534-52-1 | 230505JLM | 99% | 1,003.8 | µg/mL | +/- | 36.5200 |

| | | | | | | | |
|----|----------------------------|----------|--------------|-----|---------|-------|-------------|
| 54 | Diphenylamine | 122-39-4 | MKCH1042 | 99% | 1,002.5 | µg/mL | +/- 36.4735 |
| 55 | Azobenzene | 103-33-3 | BCCG7339 | 98% | 1,003.5 | µg/mL | +/- 36.5106 |
| 56 | 4-Bromophenyl phenyl ether | 101-55-3 | STBH6361 | 99% | 1,005.6 | µg/mL | +/- 36.5847 |
| 57 | Hexachlorobenzene | 118-74-1 | 14257500 | 99% | 1,005.9 | µg/mL | +/- 36.5988 |
| 58 | Pentachlorophenol | 87-86-5 | RP230504 | 99% | 1,004.2 | µg/mL | +/- 36.5362 |
| 59 | Phenanthrene | 85-01-8 | MKCQ8876 | 99% | 1,004.1 | µg/mL | +/- 36.5321 |
| 60 | Anthracene | 120-12-7 | MKCR0570 | 99% | 1,008.3 | µg/mL | +/- 36.6857 |
| 61 | Carbazole | 86-74-8 | 14351100 | 99% | 1,005.1 | µg/mL | +/- 36.5665 |
| 62 | Di-n-butylphthalate | 84-74-2 | MKCN4337 | 99% | 1,006.4 | µg/mL | +/- 36.6170 |
| 63 | Fluoranthene | 206-44-0 | MKCQ4728 | 99% | 1,003.7 | µg/mL | +/- 36.5159 |
| 64 | Pyrene | 129-00-0 | BCCG7845 | 99% | 1,004.3 | µg/mL | +/- 36.5382 |
| 65 | Benzyl butyl phthalate | 85-68-7 | X12I018 | 99% | 1,003.4 | µg/mL | +/- 36.5058 |
| 66 | Bis(2-ethylhexyl)adipate | 103-23-1 | MKCM1988 | 99% | 1,003.4 | µg/mL | +/- 36.5079 |
| 67 | Benz(a)anthracene | 56-55-3 | 0012022BAA | 97% | 1,004.9 | µg/mL | +/- 36.5624 |
| 68 | Chrysene | 218-01-9 | RP230512B | 99% | 1,006.2 | µg/mL | +/- 36.6089 |
| 69 | Bis(2-ethylhexyl)phthalate | 117-81-7 | MKCQ3468 | 99% | 1,003.8 | µg/mL | +/- 36.5220 |
| 70 | Di-n-octyl phthalate | 117-84-0 | 13994100 | 99% | 1,004.2 | µg/mL | +/- 36.5341 |
| 71 | Benzo(b)fluoranthene | 205-99-2 | 012013B | 99% | 1,008.4 | µg/mL | +/- 36.6877 |
| 72 | Benzo(k)fluoranthene | 207-08-9 | 012022K | 99% | 1,004.1 | µg/mL | +/- 36.5301 |
| 73 | Benzo(a)pyrene | 50-32-8 | J6IUE | 99% | 1,006.4 | µg/mL | +/- 36.6170 |
| 74 | Indeno(1,2,3-cd)pyrene | 193-39-5 | 12-JKL-118-9 | 97% | 1,002.0 | µg/mL | +/- 36.4557 |
| 75 | Dibenz(a,h)anthracene | 53-70-3 | ER032211-01 | 99% | 1,006.1 | µg/mL | +/- 36.6029 |
| 76 | Benzo(g,h,i)perylene | 191-24-2 | RP230511B | 98% | 1,006.8 | µg/mL | +/- 36.6295 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant flow 1.8 mL/min.

Temp. Program:

80°C (hold 0.1 min.) to 330°C
@ 9.6°C/min. (hold 2.86 min.)

Inj. Temp:

250°C

Det. Temp:

340°C

Det. Type:

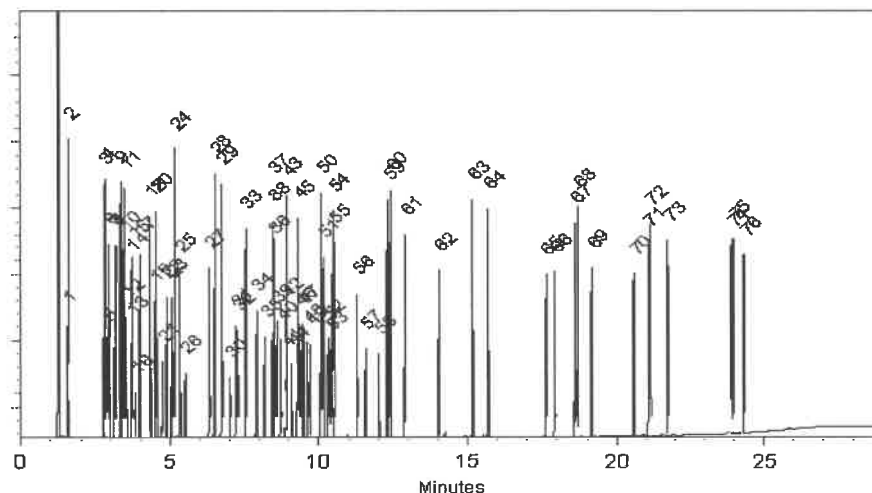
FID

Split Vent:

100 ml/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.


Tom Suckar - Mix Technician

Date Mixed: 11-May-2023

Balance Serial # 1128353505


Christie Mills - Operations Tech II - ARM QC

Date Passed: 18-May-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: 1-814-353-1300
Fax: 1-814-353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

chromatographic plus



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31206 **Lot No.:** A0201320

Description : SV Internal Standard Mix 2mg/ml
SV Internal Standard Mix 2mg/ml 2000 µg/ml, Methylene Chloride, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : July 31, 2029 **Storage:** 10°C or colder

Handling: Sonication required. Mix is photosensitive. **Ship:** Ambient

S12013
↓
S12042 } RC
12/26/23

CERTIFIED VALUES

| Elution Order | Compound | CAS # | Lot # | Purity | Grav. Conc. (weight/volume) | Expanded Uncertainty * (95% C.L.; K=2) |
|---------------|------------------------|------------|----------|--------|-----------------------------|--|
| 1 | 1,4-Dichlorobenzene-d4 | 3855-82-1 | PR-30447 | 99% | 2,017.0 µg/mL | +/- 90.8469 |
| 2 | Naphthalene-d8 | 1146-65-2 | M-2180 | 99% | 2,011.3 µg/mL | +/- 90.5917 |
| 3 | Acenaphthene-d10 | 15067-26-2 | PR-33507 | 99% | 2,008.6 µg/mL | +/- 90.4685 |
| 4 | Phenanthrene-d10 | 1517-22-2 | PR-32303 | 99% | 2,019.4 µg/mL | +/- 90.9550 |
| 5 | Chrysene-d12 | 1719-03-5 | PR-32210 | 99% | 2,013.7 µg/mL | +/- 90.6968 |
| 6 | Perylene-d12 | 1520-96-3 | PR-33205 | 99% | 2,012.7 µg/mL | +/- 90.6517 |

* Expanded Uncertainty displayed in same units as Grav. Conc.

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Quality Confirmation Test

Column:

30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

Carrier Gas:

hydrogen-constant pressure 10 psi.

Temp. Program:

75°C (hold 1 min.) to 330°C
@ 20°C/min. (hold 10 min.)

Inj. Temp:

250°C

Det. Temp:

330°C

Det. Type:

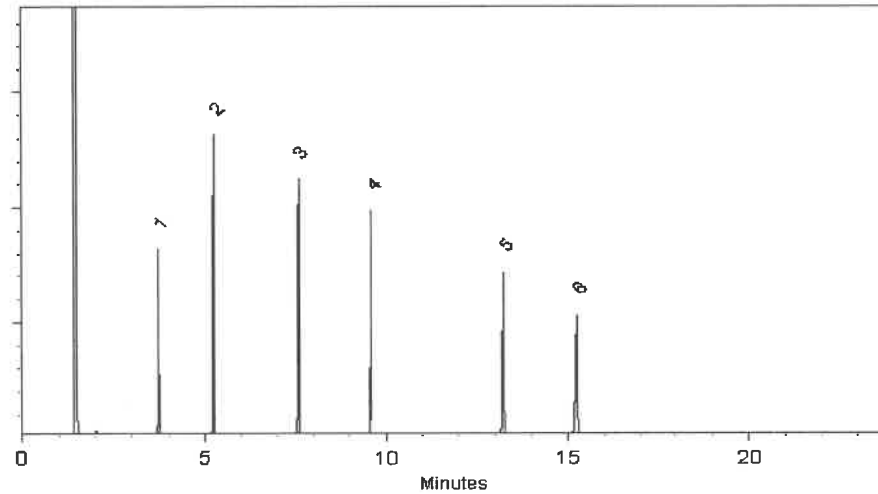
FID

Split Vent:

10 ml/min.

Inj. Vol

1µl



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Peter Robbins - Operations Technician I

Date Mixed: 23-Aug-2023

Balance Serial # B345965662

Jennifer Pollino - Operations Tech III - ARM QC

Date Passed: 25-Aug-2023

Manufactured under Restek's ISO 9001:2015
Registered Quality System
Certificate #FM 80397